THE
ARCHIVES OF DIAGNOSIS

A QUARTERLY JOURNAL DEVOTED TO THE STUDY
AND THE PROGRESS OF DIAGNOSIS AND PROGNOSIS

VOLUME III ·

Contributors of Special Articles

ABRAHAMS, ROBERT
(New York)
ABRAMS, ALBERT
(San Francisco)
BANDLER, SAMUEL W.
(New York)
BARACH, JOSEPH H.
(Pittsburg)
BASS, CHARLES C.
(New Orleans)
BECK, EMIL G.
(Chicago)
BENEDICT, A. L.
(Buffalo)
BOOTH, J. ARTHUR
(New York)
CARSTENS, J. H.
(Detroit)
DEAVER, JOHN B.
(Philadelphia)
DEXTER, THURSTON H.
(Brooklyn-New York)
DICKINSON, GORDON K.
(Jersey City, N. J.)
DOWDALL, GUY G.
(Chicago)
EINHORN, MAX
(New York)
ESHNER, AUGUSTUS A.
(Philadelphia)
FISCHER, LOUIS
(New York)
GEYSER, ALBERT C.
(New York)
GORDON, ALFRED
(Philadelphia)
GOTTHEIL, WILLIAM S.
(New York)
HULST, FRANCIS A.
(Brooklyn-New York)

KERR, LEGRAND
(Brooklyn-New York)
KILDUFFE, ROBERT
(Philadelphia)
MACKEE, GEORGE M.
(New York)
PEDERSEN, VICTOR C.
(New York)
PISEK, GODFREY R.
(New York)
PORTER, WILLIAM
(St. Louis)
POTTENGER, F. M.
(Monrovia, Cal.)
RAVOGLI, A.
(Cincinnati)
REILLY, THOMAS F.
(New York)
SCHOTT, MORRIS
(Cleveland)
SCHWARZ, GOTTWALD
(Vienna, Austria)
SMITHIES, FRANK
(Ann Arbor, Mich.)
SONDERN, FREDERIC E.
(New York)
STERN, HEINRICH
(New York)
TOWNSEND, TERRY M.
(New York)
VALENTINE, JULIUS J.
(New York)
WHITE, WILLIAM A.
(Washington, D. C.)
WILLIAMS, B. G. R.
(Paris, Ill.)
WILLIAMS, TOM A.
(Washington, D. C.)
WOODWARD, JULIUS H.
(New York)

Contributors of General Retrospects

HEROLD, JUSTIN
(New York)
McPHERSON, ROSS
(New York)
PAGE, KINGMAN B.
(New York)

SACHS, LOUIS BERTRAM
(New York)
STEIN, HERBERT E.
(New York)

Plates

Illustrations in Text

INDEX OF SUBJECTS

Page reference in bold-face type indicates a Special Article or General Retrospect; in ordinary type, an Original Abstract of an Article that has appeared in full elsewhere.

INDEX OF AUTHORS

Page reference in bold-face type indicates a Special Article or General Retrospect; in ordinary type, an Original Abstract of an Article that has appeared in full elsewhere.

THE

ARCHIVES OF DIAGNOSIS

A QUARTERLY JOURNAL DEVOTED TO THE STUDY AND THE PROGRESS OF DIAGNOSIS AND PROGNOSIS

FOUNDED AND EDITED BY

HEINRICH STERN, M.D.

New York

Special Articles

THE DIAGNOSIS OF DUODENAL AND GASTRIC ULCER

By JOHN B. DEAVER

Surgeon in Chief, German Hospital
Philadelphia

The reversal of the usual order of the qualifying adjectives in our title is warranted by the more exact localization of ulcers which occur in the region of the pylorus. For many years it was stated without question that duodenal ulcer was a rarity as compared with gastric ulcer. Only in the last few years, since surgery has invaded the pyloric region and a more accurate method of recognition has been found in the pyloric veins, to which Mayo has drawn attention, has it become apparent that duodenal ulcer so far from being uncommon is more frequent than ulceration of the stomach proper, the proportion being about two to one.

At the same time, the increased interest in the subject has reminded the profession of the common occurrence of ulceration in this region, a fact which had been made apparent years ago, especially by the large statistics of Welch, but had been allowed to slumber because of the clinical difficulties in diagnosis and the poverty of therapeutic aid after recognition. Since the successful advent of surgery into this field the importance of diagnosis is self-evident and its difficulties demand the co-operation of all in clearing up its intricacies.

It is essential at the outset to understand that there is scarcely any other serious condition which so completely runs the gamut of

clinical manifestations from latency to fulminating death. No classical syndrome will suffice in the description or diagnosis of such a Protean condition. For our purpose it will be best to consider it under separate headings, viz.:

Latent ulcer.	Hemorrhage.
The ulcer of symptoms.	Perforation.

That there are cases of ulceration which give rise to such mild and non-characteristic symptoms as to merit the term latent, there can be no doubt. In certain cases it is impossible to elicit any history of stomach trouble during the period when an ulcer was certainly present. I believe, however, that it is the rarest exception for an ulceration to form and exist for any length of time without giving some signs of its presence. The older ideas concerning the frequency of latent ulcer were taken from post mortem records in which the condition was found accidentally. It was manifestly impossible to gain information as to what had been the patient's gastric symptoms during life except from histories not specially taken with reference to this point and therefore usually incomplete and untrustworthy. The tendency of both laity and physician to minimize the importance of "indigestion," so called, and the faulty memory of certain patients account also for a percentage of latent cases reported. The characteristic intermissions of the disease give periods, often of considerable length, during which no symptoms are present or only very mild ones. Thus there are periods of latency in practically all cases, but where it is possible to obtain an accurate anamnesis we find definite symptoms in the great majority of cases. Not until the urgency of the timely recognition of disease of the upper abdominal cavity and the diagnostic import of symptoms, now too little considered, are grasped by the profession will the ghost of latent ulcer be laid. The same ignorance and apathy were observed in the development of the present acuteness in the recognition of appendicitis and gallstones. For cholelithiasis, however, the day is scarcely won and in spite of the insistence of those who are most competent to speak that gallstones are almost never quite latent, we find clinicians repeatedly making this statement, based upon post mortem findings and incomplete anamneses, their eyes being closed to a potent source of upper abdominal disturbance spoken of as

dyspepsia or indigestion.   History repeats itself and knowledge of duodenal and gastric ulceration must become diffused in the same gradual manner.

The latent ulcer often conceals itself less than we conceal it by misty ideas of the interpretation of symptoms referable to the stomach.   The more closely cases are observed and the more accurate the understanding of the symptoms of ulceration, the fewer will become the cases in this group and the greater the group of the ulcer giving symptoms.   Ulcers of the stomach or duodenum are usually classed as acute and chronic.   I have stated elsewhere that it would be better perhaps to classify them as "open" and "healed or healing."   Any ulcer, regardless of the length of time it has existed, will still be acute if it is unhealed, and is therefore liable to irritation, inflammatory exacerbations, hemorrhage and perforation.   A healed ulcer may be immune to these conditions, yet give rise to marked symptoms by reason of cicatricial deformities or surrounding adhesions formed during the active open stage.   Finally, a healing ulcer or an open ulcer of long duration may give rise to a combination of these symptoms.   The relationship of the pathology to the resulting sypmtoms is devious and inconstant so that it is well to state at the outset that often "experience is fallacious and judgment difficult."   Ulceration of the pyloric portion of the stomach gives symptoms which are practically indistinguishable from those of duodenal ulcer in the great majority of cases.   From a diagnostic standpoint therefore our recent more accurate classification is of less importance than of pathological interest.   Those portions of both stomach and duodenum which are immediately adjacent to the pylorus furnish about 80 per cent. of all cases of duodenal or gastric ulcer.   It is in this area that ulceration is most commonly attended by the better known symptoms.   It will be advantageous to consider these ulcers together as juxta-pyloric.   The further from the pylorus an ulcer is situated the more atypical the symptoms as a rule and the more difficult the diagnosis.

The early symptoms of round or peptic ulcer are frequently not characteristic.   They include varying degrees of gastric distress or pain, gas, sour eructations, nausea and occasionally vomiting.   To distinguish it from simple indigestion is, I believe, in many cases impossible.   If, however, there be a periodicity of symptoms with

relation to the taking of food, and if eating bring relief followed by distress at a longer or shorter interval, it is suggestive of the existence of ulceration. It is important that the practitioner should cease regarding so lightly the cases of indigestion he is called upon to treat and should question each case with relation to the kind and regularity of symptoms and their modification by eating, vomiting, etc. If the diagnosis be at first obscure, it will later become clear in the majority of cases by the way in which symptoms develop. Continued observation by an inquiring mind will usually result in diagnosis where the plainest indications will be overrun by one who is content with a final diagnosis of indigestion.

Pain is the most valuable symptom. In character it varies greatly and is described as boring, burning, aching, wavy, lancinating or dull and distressing. It is felt usually in the mid-epigastrium but not infrequently somewhat to the right, or less frequently to the left of the mid line. Occasionally it is referred to the left hypochondrium or left scapula. The cause of the pain is as yet undetermined. It is asserted by Moullin and others, that no sensory fibres exist in the stomach and therefore the pain must be due to irritation of the sensory nerves of the adjacent parietal peritoneum by means of adhesions, contact, or merely by excessive peristalsis. However this may be, it is certain that pain is very imperfectly localized, that its intensity, except in cases of perforation, gives but little clue to the magnitude of the ulceration or its location.

Our chief aid, therefore, comes not from the character of the pain, not from its location but from the time of its appearance and its relation to food. When the stomach is empty there is rarely any pain, but at a variable time after eating there begins a soreness or definite pain in a certain location quite constant for the same patient. It is worthy of note, however, that in ulcerative conditions the stomach may secrete a considerable amount of hydrochloric acid even in the fasting state. Billings regards this as an important sign of ulcer. This may account for the so-called "hunger pain," observed especially in duodenal ulcer when the stomach has been empty of its contents. This pain is really pre-meal and is relieved promptly by the ingestion of food. Sometimes the pain begins immediately after eating, though it is more common for it to be somewhat delayed. Immediate pain is regarded as a more serious symptom than is de-

layed pain. It is frequently stated that in gastric ulcer pain is set up at once by the ingestion of food, while in duodenal ulcer it is only after the elapse of a considerable period that pain is felt. The findings at operation, however, teach us that even in gastric ulcer, particularly the pyloric ulcer, which is preponderatingly common, it is usual for the taking of food to ease pain for a time. Roughly speaking, however, it is true that the lower in the alimentary canal the ulcer, the longer interval will elapse before pain is felt.

There is, however, a definite periodicity in relation to the taking of food, and though the degree of discomfort and the time at which it makes its appearance varies greatly, yet in the individual case it is quite constant. It may radiate to the back, and a tender point has been described just to the left, more rarely to the right, of the last two dorsal vertebræ. This sign is said to be more often due to an ulcer upon the posterior than to one upon the anterior wall of the stomach. Pain and tenderness which are referred are much less usual in simple open ulcer than in those which have formed adhesions in the course of their cicatrization and contraction.

Accompanying the pain and usually also present in the interval between food, when pain is often absent, will be found a more or less well defined and constantly located area of tenderness to pressure. This is usually in the costal angle a little to the right of the median line corresponding to the pylorus and first part of the duodenum where ulceration is most frequent. The tenderness of ulcer is usually quite sharply localized to a small spot from a half inch to two or three inches in diameter, and should not be confused with the sensitiveness to pressure throughout this region which is common in neurasthenic conditions. Acidification of the gastric contents and peristaltic activity are important factors in the production of the pain. Accordingly we find that antacids usually afford relief and almost all ulcer patients are addicted to the use of bicarbonate of soda or other alkaline substances. Vomiting or emptying the stomach by the stomach tube also relieve, both by removal of the irritating material and by allaying peristalsis. This relief of symptoms by measures which control pain or allay physiological activity is another of the salient characters of ulcer and must not mislead the physician into the idea that the ulcer itself is benefited thereby.

A third important feature is the intermissions which occur in

the course of the disease. It is now a well known fact that inter-
missions and freedom from symptoms not only do not mean healing
of the ulcer, but in the majority of cases interruption of symptoms
occurs in the presence of open and extensive ulceration.

Scrutiny of so called medical cures has now made it certain that
the majority of cases relapse. This is due not to new ulceration but
to an exacerbation of symptoms from the old ulcer which has been
lulled simply into quiescence. The analogy to ulceration elsewhere
in the body is apparent. Codman has aptly compared it to a fissure
in ano in which recurring attacks of acute inflammation give rise to
acute symptoms which again subside as the ulcer once more assumes
a chronic state. Evidently then in the symptomatic state we have
usually to do with an inflamed ulcer, in the latent stage with an unin-
flamed erosion.

That these alternations of symptoms and latency are but little
influenced by medical treatment is evidenced by the fact that it was
but a short time ago considered essential to starve the patient, while
now, under the Lenhartz treatment, a liberal diet is provided with
equally good results. The natural intermissions in the course of the
disease have hitherto been credited to medical treatment as cures.
Greenough and Joslin in tracing patients discharged from the medical
wards of the Massachusetts General Hospital as cured of gastric
ulcer found that over half had relapsed. Paterson recently found
that less than 25 per cent. of these patients treated in the London
Temperance Hospital have remained well. It is time to appreciate
the fact that intermissions occur in the natural history of the disease
and cease using them as illustrations of medical cures.

There is no definite periodicity in remission or recurrence. They
may be long or short. In general, however, in cases which do not
respond at once to medical treatment the recurrences tend to come at
even shorter intervals until the patient may seldom be free from
discomfort or pain.

Vomiting, next to pain, is the most common symptom of gastric
ulcer. In duodenal ulcer it occurs less often. Nausea is more fre-
quent than spontaneous vomiting, and when a history of vomiting
is elicited it will sometimes be found to have been induced by the
patient for the relief afforded. Eructations of gas and of acid
material are the rule, but on account of their common occurrence are

Sp.V. Splenic Vein
P.V. Portal Vein
C.D. Common Bile Duct
S.M.V. Superior Mesenteric Vein
S.M.A. Superior Mesenteric
    Artery
H.A. Hepatic Artery
Sp.V.-P.V. Probe through
    Splenic Vein and Portal
    Vein
S.M.V.-P.V. Probe through Su-
    perior Mesenteric Vein and
    Portal Vein
*C.D.-C.D. Probe through Com-
    mon Bile Duct
E. Erosion
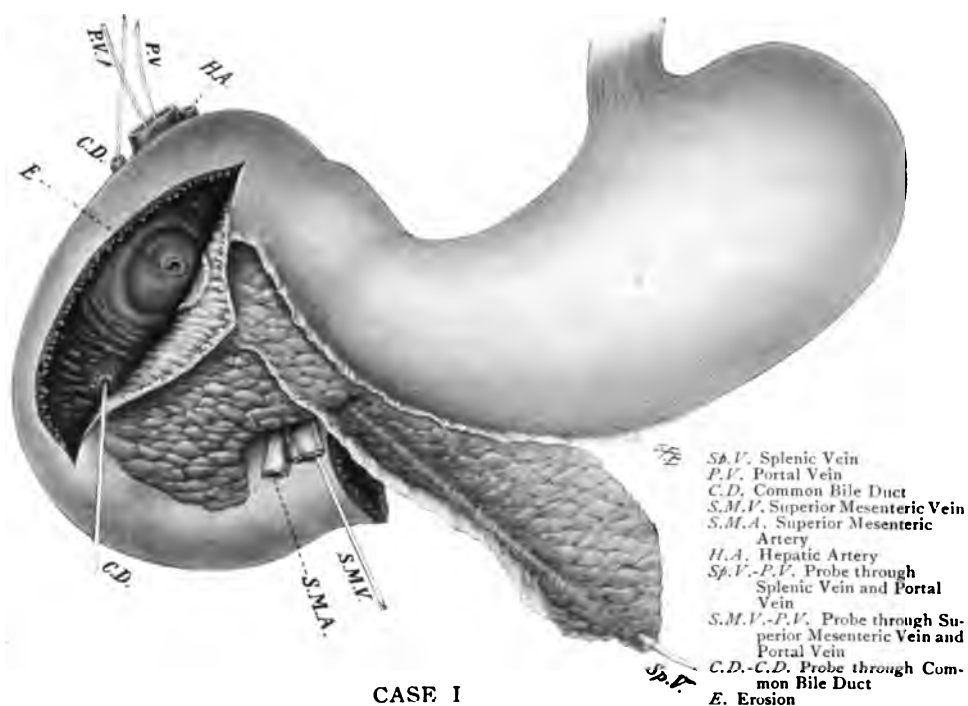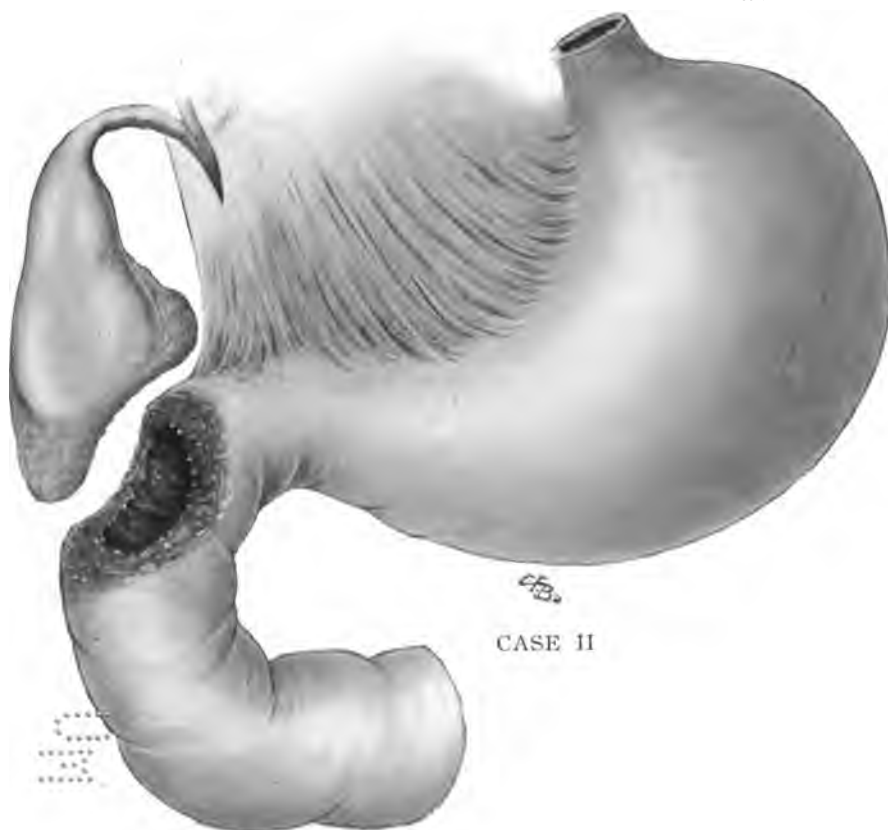
CASE I

CASE II

THE DIAGNOSIS OF DUODENAL AND GASTRIC ULCER
John B. Deaver

of slight importance. When this occurs long after a meal, denoting gastric stasis, it is significant of a gross pathological condition which may have as its cause pylorospasm, the result of irritation of a pyloric ulcer or perhaps stenosis, the result of cicatricial deformity.

Jaundice is a rare symptom and indicates a concurrent catarrhal duodenitis rather than an actual invasion of the papilla of Vater by the ulcerated area.

Any unhealed ulcer may be the origin of any form of hemorrhage—of a sudden and fatal flow of blood which kills in a few minutes: of repeated hemorrhages, alarming in quantity, but not immediately lethal: or of occult hemorrhage only to be detected at times by microscopical and chemical examination of vomitus or feces.

When hemorrhage is one of the early symptoms it is more apt to have its origin in mucous erosions and not from a large vessel. This form of hemorrhage, however, may be profuse and even fatal. Small recurrent hemorrhages, only discovered microscopically or chemically, or seen only as streaks in the vomitus, are usually due to capillary oozing. Hemorrhage from veins does not often reach grave proportions. When a chronic ulcer reaches an artery, however, there is danger of an erosion which will permit dangerous loss of blood. The first hemorrhage does not usually kill. But the first in erosion of large vessels is usually followed at a short interval by repeated hemorrhage and not infrequently, death. The more profuse the hemorrhage the more apt is it to be due to ulcer and not to carcinoma, portal congestion or gastritis.

Hemorrhage is a valuable sign in diagnosis and well nigh pathognomonic. If too much dependence be placed on its presence, however, many diagnoses will be missed, as it occurs in only about 25 to 30 per cent. of the cases. This is especially true of duodenal ulcer, in which it is less frequent than in ulcer of the stomach. As Moynihan has remarked, it is almost as reasonable to diagnose pregnancy from a ruptured perineum as duodenal ulcer from hemorrhage. Profuse hemorrhage from ulcer in this location occurs only after the ulcer has opened up an artery in its bed, usually the pancreatico-duodenal. I have recently had one such fatal case, which died before operation could be performed.

Case I. C. L., age 42 years, married. Hungarian. Weaver. Admitted to German Hospital Dec. 8, 1909. Died Dec. 17, 1909.

Complaint: Pain in right hypochondrium and lumbar region.

Family history: Negative.

Personal history: Weaver for 27 years. Came to the U. S. five years ago. Alcohol regularly in form of beer. Smokes considerably. Denies venereal diseases.

Present illness: Two and a half months' duration. Began with pains in the right chest under costal margin, and in right lumbar region. Pain was more or less continuous, becoming sharp at times, worse on deep breathing, coughing, or when lying down; gains most relief in sitting posture. Says these pains are worse after eating, occasionally relieved by vomiting (vomits but seldom), and has never seen blood in vomitus or stool. Has never been jaundiced. Gives history simulating mild attack of gallstone colic. Has lost no weight. As a rule is constipated. No appendiceal symptoms.

Physical examination: Fairly well developed male. Dilatation of superficial veins of cheeks. Lungs: Negative. Heart: Negative. Abdomen: Liver extends from 6th rib to 2 c.m. below costal margin. Slight rigidity of both upper recti; some slight tenderness to deep pressure on right side. Stomach: Distended, lower border reaches to 1 c.m. below umbilicus. Washed out six hours after full meal, some few food particles obtained. X-ray examination of stomach after ingestion of bismuth: Slight gastrectasis and a coincident gastroptosis, the lower end of the stomach being about 7 c.m. below the umbilicus.

Analysis of stomach contents: 270 c.c. of semi solid, poorly digested food particles, some vegetable debris, much mucus.

Reaction, acid. Total acid, 39. Free HCl., 23. Lactic acid, negative. Occult blood, negative. Bile, negative.

Microscopically: Starch, fat, many yeast cells, many sarcinæ cells.

Stool: Semi liquid, greyish brown, much vegetable débris. Reaction, alkaline. Occult blood, negative. Bile, traces.

Microscopically: Pus cells, phosphates, epithelium, soaps and neutral fats.

Stool (after collapse): Semi solid, brownish black, grumous. Blood, *positive*.

Cammidge reaction of urine, negative.

Blood (on admission): Hemoglobin, 92 per cent.; erythrocytes, 4,970,000; leucocytes, 5,550.

Dec. 9, 1909: "Cold in nose" this A.M. with a productive cough; lungs clear, however.

Dec. 10, 1909: Crackling and mucous râles in both chests posteriorly. Considerable coryza.

Dec. 13, 1909: At 8.10 A. M. patient collapsed with all indications of an extensive internal hemorrhage; pulse not palpable at wrist, skin leaking profusely, semi-conscious, marked pallor and clamminess of skin. Responded to hypodermic injection of camphorated oil and expelled about 400 c.c. of old decomposed blood. On regaining full consciousness, said that late last night

he felt nauseated and weak, saw specks in front of eyes, some shortness of breath and some increase in the old sore pain under the ribs.

Blood (day of collapse) : Hemoglobin, 29 per cent.; erythrocytes, 1,430,000; leucocytes, 18,200. (Second day after collapse) : Hemoglobin, 17 per cent.; erythrocytes, 1,100,000; leucocytes, 12,612.

Pathological Report : Duodenal ulcer measuring 2 cm. in diameter situated on the posterior internal aspect of the descending portion of the duodenum about 6.5 cm. from the pyloric sphincter. The ulcer is chiefly on the posterior wall. It is deep with overhanging edges and base is hard and slightly nodular, and in a portion of its circumference rests against the head of the pancreas. A point of erosion in base of the ulcer about its middle opens a branch of the inferior pancreatico-duodenal artery. The patulous common bile duct runs beneath the right margin of the ulcer somewhat diagonally to end in the papilla, which is therefore situated below and a little internal to a line marking the vertical diameter of the ulcer. Portal vein is covered by the thickened base of the ulcer, but is not obstructed; there is no lymphatic enlargement in the retroperitoneal area.

As Paterson remarks, "there is nothing more tragic in the field of human disease than death from sudden perforation of gastric ulcer—tragic not only from its suddenness, but from the fact that the victim is often a young person in the prime of life who to all outward appearance has been in the enjoyment of perfect health." Duodenal ulcer is more dangerous in this respect than gastric ulcer, and ulcers on the anterior aspect of the stomach than those on the posterior wall. Acute perforation announces itself by sudden, sharp, excruciating pain, usually epigastric but so severe that the whole upper abdomen is designated without distinction. The patient may feel distinctly that something has given away. At first there may be collapse with rapid feeble pulse, cold extremities, clammy sweat, especially if concomitant hemorrhage be severe. Usually collapse is not a prominent feature. In a small percentage of cases death may occur in primary shock (4 per cent. Fenwick). Usually in one or two hours a reaction begins, the pulse becomes slower and of better quality and the patient appears to be in better condition. The abdomen, however, is markedly rigid (board-like rigidity) and retracted. Tenderness is extreme and usually general, though more marked over the upper abdomen. Gradually distension begins and gas or fluid may or may not be demonstrated within the cavity. Liver dulness is decreased and may be absent, but this is not invariable. Vomiting occurs in less than half of all cases. Leucocytosis is usually

present, but may be absent. The polymorphonuclear neutrophile percentage is increased. The blood picture is not sufficiently uniform to warrant delay, if it be necessary to delay in order to secure a count.

In addition to the acute perforations there are those which occur subacutely, or in chronic fashion. The symptoms at the outset are more mild, or in the chronic form indistinguishable, the site of the perforation already being guarded by adhesions. In these cases we are more dependent upon a careful history for diagnosis, and often only a tentative diagnosis can be made. Surgical indications, however, are usually plain. Such cases may eventuate in general peritonitis of slower development, in abscess, in enveloping adhesions or fusion with one or more of the adjacent viscera.

The following case is an illustration of the manner in which acute perforation may be prevented by adherence to a neighboring viscus.

Case II. A. W., age 42 years. Married. Roumanian. Salesman. Admitted to German Hospital, Nov. 26, 1909; refused operation on November 27, 1909, and went home.

Complaint: Attacks of epigastric pain with vomiting.

Family history: Negative.

Personal history: in U. S. 28 years. Denies alcohol and venereal diseases.

Present illness: Five years' duration. At that time had attack of severe pain under right costal margin of three days' duration. Was not jaundiced. Was told that he had some enlargement of the liver at that time. Enjoyed good health from this time to two years ago, having been entirely free of pains and gastric symptoms. At this time he had another attack similar to first—sudden severe pain under right costal margin in region of gall bladder, which later radiated into epigastrium and was associated with nausea and vomiting. No jaundice. Since then has had these attacks every month, sometimes every two weeks. Of late these attacks have been more severe than usual and have been associated with a sense of pressure from right epigastric region through to the back. During these attacks he would vomit almost everything he would eat; had a severe burning pain in epigastrium, made worse by eating and always somewhat relieved by vomiting. Has vomited blood; stools frequently light in color.

Present attack: began two weeks ago in same manner, but has persisted, at times being much worse. Has been vomiting everything eaten, vomitus is bloody looking and exceedingly sour. Act is violent and forceable. Has had considerable belching. Patient states that in intervals between the previous attacks he had no gastric distress of any kind, could eat anything. Never noticed blood in stools. Thinks he has lost about fifteen pounds in two years.

Physical examination: Patient sits upright in bed with both hands pressed into epigastrium, evidently in considerable pain. Looks emaciated. Heart and lungs negative. Abdomen scaphoid. When lying nothing palpable. Liver dulness diminished somewhat, edge not palpable. Stomach can be indefinitely palpated on deep inspiration, gives sensation of thickened stomach wall or a full stomach. Stomach inflated, no masses palpable. Lower curvature seen and found by percussion to hang 3 cm. below umbilicus, upper curvature below tip of ensiform cartilage. Capacity 1,300 c.c. After removal of test meal, washings come away fairly clean.

Vomitus: Liquid, dark brown stomach contents, 400 c.c. Total acidity, 57 Free HCl., 45. Occult blood, positive. Bile, negative.

Microscopically: Red blood corpuscles, many. Starch.

Test breakfast: 470 c.c. stomach contents resembling coffee grounds. Acid reaction toward litmus. Total acidity, 52. Free HCl., 42. Bile, negative. Occult blood, positive.

Microscopically: Red blood corpuscles, many yeast cells, little starch, much neutral fat.

Blood: Hemoglobin, 90 per cent.; erythrocytes, 4,820,000; leucocytes, 16,900; polynuclears, 80 per cent.; lymphocytes, 14.5 per cent.; mononuclears, 0.5 per cent.; eosinophiles, 0; basophiles, 0; transitionals, 5 per cent.; total, 100 per cent.

X-ray examination: Very faint shadow extending downward and inward to a point midway between the ensiform cartilage and the umbilicus. Affected slightly by deep inspiration.

On Nov. 27, 1909, patient refused operation and went home. Patient readmitted Dec. 1, 1909. Recovered and was discharged on Dec. 15, 1909.

Operation: Dec. 2, 1909. Upper right rectus incision; peritoneum opened, exposing a matting of viscera—stomach, duodenum, gall bladder. Incision enlarged; site of operation walled off with gauze pads. Gall bladder seemed to form wall of duodenum about 1 inch from pylorus, at which place the fibrous tissue was 1 inch thick and very dense. The gall bladder was separated and an opening found in the duodenum—evidently the seat of duodenal ulcer where the gall bladder was forming a barrier to perforation. The duodenum was so friable that it was torn completely across. The duodenum was dissected free so as to enable closure. Pylorectomy performed. Gall bladder then attacked; thickened, resembled carcinoma. After cutting through fibrous mass and cystic duct, gall bladder was dissected from liver. One piece of gauze surrounded by rubber dam was sutured to gall bladder fossa with plain catgut. One glass tube passed to subhepatic fossa. Wound closed in layers to drainage.

Pathological report: Macroscopy: Gall bladder 7 x 5 x 2 c.m. One surface shows ulcerated area size of a dollar and serosa throughout is thickened. Walls greatly thickened, especially on inferior portion, where there is a nodular infiltration of marked density, which is on cut surface, white with irregular yellow modeling. Mucosa somewhat injected and atrophied. Pyloric

end of stomach 7.5 x 5.5 x 1.5 cm. Serosa normal. At pyloric end walls are infiltrated with irregular nodular formation. Cut surface shows white connective tissue-like material. Mucosa there is ecchymotic, otherwise apparently normal. Microscopy: Stomach. Marked chronic hyperplastic gastritis with marked thickening of submucosa and muscularis at and about pylorus. Gall bladder. Suppurative with hemorrhage and necrosis.

Cicatrizing ulcer and cases complicated by chronic perigastric or periduodenal adhesions are characterized less by acute pain and hematemesis than by persistent indigestion and signs of obstruction at the pylorus or the site of a stenosing cicatrix. Cases of hourglass stomach fall into this group. Diagnosis rests upon a history indicating chronic ulcer with one or more of the following signs as given by Robson and Moynihan.

(1) Disappearance of fluid introduced through the stomach tube, "as though it had flowed through a hole." (Wölfler.)

(2) After cleansing the stomach by lavage, a sudden gush of putrid, sour, ill-digested food, etc. (Wölfler.)

(3) Paradoxical dilatation: succession splash in pyloric cavity after siphonage of the cardiac. (Jaworski.)

(4) Distension of cardiac loculus, its gradual subsidence, and concomitantly the distension of the pyloric loculus. (Eisenberg.)

(5) During this period a gurgling, forcing sound heard over or near the middle of the stomach. (Eisenberg.)

(6) On distension with CO_2 a large increase, even to doubling, in the thoracic area, tympanitic on percussion, and a slight distension clearly demarcated, of the pyloric loculus.

(7) Rarely a sulcus may be seen on inflating with CO_2.

The frequency with which carcinoma arises upon the site of a chronic ulcer has but recently become appreciated. That this was an occasional occurrence has long been known, but the last report from the Mayo Clinic finds evidence of a preexistent ulcer in 71 per cent. of 153 cases of gastric carcinoma. The difficulty of determining when the malignant transformation has begun is great and affords a strong argument for radical treatment of ulcer.

These histories fall into two groups.

I. Carcinoma developing on latent ulcer. In these cases it may be possible to obtain a history indicative of ulcer years before with no intermediate disturbance, or no history of gastric disturbance at

Drawn from hardened specimen   CASE III

The Diagnosis of Duodenal and Gastric Ulcer

John B. Deaver

any time may be available. At operation, however, distinct evidence of preexisting ulcer may be seen. The diagnosis is then of uncomplicated carcinoma developing in a typically insidious manner, the chief signs important for recognition being indefinite gastric distress and other neutral symptoms of indigestion coming on without apparent cause in a patient of the cancer age, resistant to treatment, accompanied by depression, langour, an increasing loss of appetite and lowered general tone. Soon early cachexia comes on with its progressive loss of weight, pallor and weakness. In such a case, if the diagnosis is not made on suspicion it is of no service from a therapeutic standpoint.

II. In the second group of cases there have long been signs indicative of ulcer. It is the increase of symptoms and rapid lowering of the patient's general condition that excite suspicion. Cure is rare unless the operation has been undertaken for the ulcer primarily and the carcinoma discovered accidentally.

The following is an example of a recent case of carcinoma engrafted upon latent ulcer.

Case III. P. J., age 57 years. Married. Russian. Slaughter-house employe.

Admitted to German Hospital, Dec. 8, 1909, and died Dec. 20, 1909. Cause: Pulmonary embolism.

Complaint: Pain and soreness in epigastrium and under right costal margin.

Present illness: Began four or five months ago. In ——— Hospital at this time with probable diagnosis of carcinoma of stomach (based on successive findings—four times—of complete gastric anacidity and Oppler-Boas bacilli. At onset developed a moderate soreness under right costal margin and in right epigastrium with occasional vomiting. Pain has persisted off and on, occasionally returning as moderately severe. Attacks of pain in above-named region associated with vomiting. Says he has had distress, bloating and considerable belching since onset of trouble. When soreness is present, always feels some better after eating. Has never vomited blood. Lost about five to eight pounds in past four months. Constipated. No bowel movements in last four days. Last attack day before yesterday: pain in epigastrium and under right costal margin, radiating to right shoulder and both sides of loin. Began vomiting soon after and has been vomiting since. (During examination has vomited three times clear sour fluid.) Never been yellow. Gives no typical history of gallstone colic. No appendiceal history. Says before onset four months ago never had the mildest kind of stomach trouble.

Past medical history: Six years ago "kidney trouble." Remembers nothing else; no typhoid.

Physical examination: Evidently in considerable pain. Belches considerably. Vomiting small amount. Locally, some tenderness and rigidity of upper recti, chiefly on right side. Points high in epigastrium as seat of present distress. No masses. No gastric distension. Liver, 6th rib to 2 cm. below costal margin. Edge faintly palpable. Some tenderness over region of gall bladder on deep breathing. Lungs, emphysematous. Heart, outlines normal, sounds clear but distant. Stomach, evidently lessened motility; almost all of test meal obtained. Capacity 1500 c.c. Lower border under inflation found on level with umbilicus.

Laboratory findings. Stomach analysis: 300 c.c. fairly well digested stomach contents containing a little respiratory mucus. Total acidity, 15. Free HCl., 12. Occult blood, negative. Bile, negative.

Microscopically: Starch (amylodextrin), yeast cells, neutral fat.

Stool: Liquid stool containing seybalous masses, greenish black in color and considerable dark green mucus. Occult blood, negative. Bile, positive. Reaction, alkaline.

Microscopically: Much bismuth, neutral fat, soap and fatty acids, phosphates.

Blood: Hemoglobin, 94 per cent.; erythrocytes, 4,910,000; leucocytes, 6,350.

Dec. 11, 1909. General condition much improved; has not vomited for past two days.

Operation: Dec. 11, 1909. Pylorectomy and posterior gastroenterostomy.

Pathological report. Macroscopy: Pyloric end of stomach and upper end of duodenum (very small). Meas. 13 x 7 cm. Serosa normal except that covering an area 2 x 5 cm. on antero-inferior surface of stomach at junction with duodenum where it is thickened, puckered and shows adhesions, folds of great omentum being drawn up and tightly adherent to this area. Along greater curvature at this side the great omentum is thickened and infiltrated with a dense tissue continuous with the mass in the stomach. Nearer the cardia enlarged lymph nodes are palpable. The gastric wall beneath this area is infiltrated with an annular mass of dense tissue which is seen on opening stomach to surround the bed of an old peptic ulcer 3 cm. in diameter. The component tissue is very dense, white and infiltrating surrounding gastric wall. Mucosa not ulcerated. Normal except the area of healed ulcer. Ulcer probably gastric since no transition in structure of mucous membrane, above or below, can be demonstrated. Microscopy: Stomach carcinoma (engrafted on chronic ulcer). Lymphnode, marked metastasis (greater curvature). Lymphnode, metastasis (lesser curvature).

The differential diagnosis between gastric and duodenal ulcer can often be made. The location of pain and tenderness to the right of the median line, the later occurrence of pain after eating, occasionally melena without hematemesis all point rather to the duodenal loca-

Drawn from hardened specimen   CASE III

THE DIAGNOSIS OF DUODENAL AND GASTRIC ULCER
John B. Deaver

tion. We must bear in mind that the latter is now known to be the most frequent site. It is not so essential to distinguish between these two conditions since the treatment is the same.

The X-ray has been of almost no assistance to me in the diagnosis of upper abdominal disease. The interpretation of these conditions by fluoroscopic examination or from the skiagram is extremely difficult and after considerable experience I am not hopeful that it will ever approach in accuracy the clinical deductions from history and examination.

The test meal is deserving of more consideration, but is also a distinctly subordinate aid to diagnosis. If traces of blood are found it is of great assistance, but the chemical analyses are often misleading. Even blood obtained in gastric lavage is occasionally due to severe retching or traumatism by the stomach tube.

The differential diagnosis of duodenal and gastric ulcer is complicated both in theory and practice.

The frequency with which typical symptoms are absent and replaced by those common to gall bladder disease, early carcinoma, chronic appendicitis and functional digestive disorders make the task of the careful physician difficult and often distressing.

It is sufficient to refer to the numerous systematic descriptions of the differential diagnosis which are to be found in text books and literature and to pass on to the consideration of what I believe to be fully as important from the practical standpoint as an anatomically correct diagnosis, namely, the establishment of the advisability of surgical interference. The serious accidents of hemorrhage and perforation usually are sufficiently clear in diagnosis and indications. In the case of profuse hemorrhage from the stomach practically the only disturbing possibility is the existence of esophageal varices. These are associated with cirrhosis of the liver, but in about one third of cases dying in this manner from rupture of varices in cirrhosis, which were collected by Preble, it was impossible to demonstrate the cirrhosis. The surgeon must be careful, therefore, in concluding that an ulcer is present from the occurrence of hemorrhage alone without symptoms. Especially is this true if cirrhosis be present or suspected.

In perforation the diagnosis is often difficult, especially if an accurate history be unobtainable. Thus in 49 operations for perforated

duodenal ulcer, collected by Moynihan, in 18 the diagnosis had been appendicitis. It may be confused also in some instances with ruptured extrauterine pregnancy or acute intestinal obstruction. None of these errors is serious if the only proper treatment for all be instituted without delay, namely, operation. Gastritis or ptomaine poisoning, the only non-surgical conditions which are likely to be confounded, are seldom sufficiently severe to raise the doubt. In the latter case the source of the poisoning may be detected and the persistent vomiting and diarrhea are distinguishing features.

Acute hemorrhagic pancreatitis offers greater difficulties, and in the early stage, when operation is of so great importance in perforation, we believe it to be impossible in the majority of cases before opening the abdomen.

The early differentiation of ulcer from cancer and gall bladder disease presents many difficulties. Cancer produces a rapid general effect which often overshadows the local symptoms. In gallstones and ulcer the local symptoms are most prominent, often the only ones, the appetite and general health remaining good. In cancer the pain bears less relation to food and remedial measures. Food is more likely to produce immediate distress than to relieve it. Cancer gives rise to a continuous systemic effect in the distress, langour, depression, and early failure in strength and nutrition, while the individual symptoms vomiting, eructations and pain are more irregular. The symptoms of uncomplicated gall bladder disease also show less regularity and relation to food than do those of ulcer. Suddenness of onset and cessation, radiation to the right hypochondrium and back are common. Indiscretions of diet play little part in initiating an attack and between attacks the digestion may be quite normal. Nausea and vomiting are excited by the painful impressions and not by food, blood is rare in vomitus or stools. In ulcer it is present in about one fourth to one third of all cases at some time, while in cancer it is common.

When disease of the gall bladder or ulcer is complicated by adhesions or cicatricial deformity in the absence of a clear history or definite symptoms, a differential diagnosis is often impossible at the present time. Yet the patient may suffer from severe general digestive symptoms, have his nervous condition unsettled, his efficiency impaired and run continual risks of dangerous exacerbations. I can

see little practical benefit from long didactic theoretical hints for differentiation when experience in every large clinic goes to show daily that those best versed in this differentiation are not infrequently in error. The operation, however, fulfils its purpose as well as if the abdominal wall had been glass and the true state of affairs known beforehand. From the standpoint of results it is important for the profession to know that chronic organic disease of the upper abdomen is best treated surgically whether it be cholelithiasis, cholecystitis, chronic ulcer, pancreatitis, or early carcinoma. If the so called neuroses can be ruled out, and this is usually possible by the presence of other neurotic stigmata, capriciousness of symptoms, family taint, or unusual conditions of stress and strain, the physician must consider the advisability of surgical treatment. At any rate, the surgical consultant should be called, not the mere specialist in operation, but the man who is a specialist in the manifestations of surgical diseases and so best qualified to estimate therapeutic needs and possibilities. In a majority of cases the diagnosis can be made, but where the diagnosis lies between two surgical diseases inability to differentiate them with certainty should not deprive the patient of the opportunity of relief. A surgical diagnosis should determine intervention. The opening of the abdomen will establish the pathological diagnosis which determines what shall be done. Exact diagnosis has its victims as well as the lack of it.

Surgical Indications. Absolute indications are perforation, stenosis of the pylorus and recurrent hemorrhages which threaten life. It is not to operate during the profuse dangerous hemorrhage but if the patient can be tided over to a state of quiescence operation should be done.

In stenosis of the pylorus the relief afforded by gastroenterostomy is magical. Pyloroplasty may occasionally be of service but is not so universally applicable.

In cases of large indurated ulcers at the pylorus excision is indicated if there be any suspicion of malignancy.

In perforated ulcer it is my practice to make a gastroenterostomy in addition to closing the ulcer, and having had eleven cases with but one death I see no reason to omit the anastomosis. In my opinion it aids immediate recovery as well as affords security against recurrence.

It is difficult to specify at just what point it should be decided to adopt surgical measures in the treatment of the less immediately urgent conditions. Assuredly all patients should have the benefit of an attempt at medical cure. But records now show that there is but little tendency toward spontaneous cure, and the natural intermissions are being withdrawn from the catalogue of medical cures. The low percentage of real recovery I have already mentioned. Surgery, on the contrary, offers a chance of cure, ranging from 70 to 90 per cent. Clearly those who are suffering, are unable to take sufficient nourishment or to perform their work in a satisfactory manner should be given the opportunity of relief.

I have traced 66 patients operated upon for benign disease of the stomach or duodenum of which 66.6 per cent. are cured; 80.3 per cent. cured or greatly improved. Of these cases none died as an immediate result of the operation.

FIVE DIAGNOSTIC METHODS OF JOHN B. MURPHY, OF CHICAGO

By GUY G. DOWDALL
(From Professor Murphy's Clinic)

In the every day work of a large surgical clinic, where there is maintained an aggressive spirit of progress, new ideas and new methods are constantly being tried, and deductions made as to their value. Those proving of no merit are soon discarded, but those of worth are adopted, and in time become a part of the regular routine procedure. The longer the accepted methods are used without showing signs of being fallacious, or without being superseded by better ones, the more weight is given them. This is true in the matter of operative technic, but it is still more true of diagnostic methods, and the latter, if possessing real merit, are of value not only to the surgeon, but also to the general practitioner.

In the service of Dr. J. B. Murphy there are in use five diagnostic methods, which were original with him, and which have been used by him for a great many years. They have been thoroughly

FIG. 5. "DEEP-GRIP PALPATION"

FIVE DIAGNOSTIC METHODS OF JOHN B. MURPHY, OF CHICAGO

Guy G. Dowdall

FIG 6
"PIANO
PERCUSSION"

FIG. 7
"PIANO
PERCUSSION"

FIVE DIAGNOSTIC METHODS OF JOHN B. MURPHY, OF CHICAGO
Guy G. Dowdall[1]

fingers fall properly and in order, but it is of considerable value, and will help to prevent an error in diagnosis.

And finally to one other method attention is called. It is most simple, and should be used by every careful examiner:—the simultaneous palpation of both iliac fossæ in cases of suspected acute appendiceal involvement. We have all noted in cases where there is considerable trouble in the appendix, that the affected side offers greater resistance to the examining hand. We palpate first the healthy side and then the other, and see quite a difference, especially in typical cases; but Dr. Murphy has pointed out and proved by clinical results during the past twenty years (since 1889), that decidedly more information is gained when both sides are palpated simultaneously. Compare the way in which the examiner's left hand sinks into the patient's iliac fossa, to the lessened descent of his right hand on the side of the inflamed appendix. The difference is grossly apparent in the typical cases. So it is with the slightly involved appendices, those cases with slight recurring attacks, the atypical cases, that this test is most serviceable. An equal pressure on the two sides at the same time, "comparative bimanual examination," will show a difference which, with practice, is discernible in practically all cases where there exists an acute pathologic condition within or around the appendix.

In reporting these methods it is hoped that a working knowledge and use of these procedures will prove of value in that class of difficult cases to which they are applicable, and that it may stimulate also an interest in that most essential field of work—differential diagnosis.

A NEW POSTURE FACILITATING THE RECOGNITION OF TRICUSPID DISEASE

By HEINRICH STERN

New York

Structural disease of the right heart, according to the generally accepted statistics, does not form more than about two per cent. of all cardiac lesions. However, if dilatations of the right heart and the

relative tricuspid incompetency resulting therefrom—an occurrence ensuing at some period during the course of every enduring heart affection—be included among the cardiac lesions, tricuspid disease becomes a rather frequent fact.

I am of the opinion that many instances of organic disease of the segments as well as such of muscular or relative incompetence of the tricuspid valve are overlooked. If the insufficiency is but slight and complications have not arisen, the attention of the examiner is not especially drawn to the right heart, and if he, notwithstanding the absence of the characteristic symptoms, proceeds to examine the organ, he may not be able to auscultate the characteristic murmurs attendant upon tricuspid disease. Failure to elicit the soft and blowing systolic murmur, partially or entirely supplanting the first sound—a distinct feature of tricuspid incompetence—by no means implies that the valve is competent. Again, the presence of tricuspid stenosis cannot be excluded if a presystolic or diastolic bruit heard over the tricuspid area cannot be fastened to a narrowing at the tricuspid opening.

I have found that it is often possible to induce the murmurs which are characteristic of tricuspid disease when they have been absent, and to accentuate them so that they are better audible and distinguishable in case they be present, but are vague and indistinct.

We generally examine the heart while the individual is in the erect or recumbent position and the more painstaking of us examine our patients by utilizing both postures. When a patient is on his back and there is any tendency of distension of the jugular veins it will be evinced there and then. By lowering the head of the patient, while he is still on his back, the jugular veins become more distended, as a rule, and may begin to pulsate. Distension of the vein, or its pulsation, will increase in direct ratio to the lowering of the head, but when a certain point is reached, which is dependent upon individual factors, the pulsation diminishes more or less and the engorgement may also recede. This lowering of the head, which in reality is but an extension, a stretching of the muscles of the neck, the veins, etc., is reflected in the tricuspid area, where now murmurs are noticed that were not perceptible before or which have been quite indistinct. The murmurs elicited while the patient is in this posture may be determined in accordance with the point of maximum intensity and

the direction of transmission. They can always be differentiated from murmurs emanating from the mitral orifice.

Tricuspid murmurs are occasionally intermittent, that is, they are audible on some days, inaudible on others. In this posture a tricuspid murmur once audible is always audible.

The venous hepatic pulse, a characteristic phenomenon of tricuspid insufficiency, is deemed of rare occurrence by most clinicians. With the aid of the posture just described I have observed the hepatic venous pulse seven times during the past sixteen months. The pulsation was most marked over the left lobe of the liver and the epigastric region. In two instances it was plainly noticeable in the right infrascapular region. Hepatic venous pulsation is apt to disappear suddenly; in three of my cases it soon returned after the patients had been in this posture.

Neither jugular nor hepatic pulsation nor production of tricuspid bruits or accentuation or clearness of tricuspid murmurs could be induced in four of the patients who were also examined in Trendelenburg posture. Again, the latter can only be procured in office or hospital practice.

The new posture produces an exaggeration of tricuspid incompetence or stenosis, and it is evident that the patient can remain in this position but for a very brief period. All his symptoms become aggravated for the time being, and it is only on account of this general temporary aggravation of all the symptoms that the characteristic phenomena, as tricuspid murmurs, venous engorgement and pulsating jugulars, and the venous hepatic pulse, become prominent enough to clinch the diagnosis of tricuspid disease in the doubtful cases.

The examiner must be alert when he searches for a tricuspid lesion while the patient is in this position. His senses of hearing, sight and touch must be brought into action at the very same moment. He should finish his examination in as brief a period as possible. He must be ready to proceed with the examination, stethoscope attached to the ears, at the very moment the patient has assumed the posture. He should stand behind the patient somewhat to the right of the head of the latter when an examining table is utilized. In case the examination is made in bed, the physician should be sitting at the right side of the head of the patient, who has been placed across the bed. In both cases the head of the patient should be sup-

ported by either the left hand of the examiner, or in advanced cases by both hands of an attendant. It should not be dropped at once over the edge of the examining table or bed, but should be brought down very gradually and be immediately elevated as soon as the dyspnea and the venous engorgement become excessive.

It goes without saying that the entire chest and abdomen must be fully exposed. The patient's head should be slightly inclined to the left, his thighs flexed and knees bent outwardly.

FURTHER STUDIES OF THE DIAGNOSTIC-VALUE OF THE "HEMOLYTIC TEST" IN CANCER AND TUBERCULOSIS

By FRANK SMITHIES

Ann Arbor, Michigan

(From the Clinical Laboratory of Dr. Smithies)

The history of the attempts to discover in the blood sera of patients affected with cancer some specific test for new growth is both interesting and instructive. The elaborate researches of Ehrlich and his followers in the endeavor to find characteristic morphological changes in the blood corpuscles of individuals the victims of malignant disease are well known. These studies proved only that the blood of cancer patients presented a rather varying type of secondary anemia, although they were productive of an immense amount of information regarding the differential estimation of white cells, and the behavior of blood cells in general to various dyes. Studies on the chemistry and the physical properties of blood sera of cancerous subjects have not until very recently given promise of disclosing anything typical for this protean class of ailment. The discovery, in 1900, by Grünebaum[1] and Ascoli,[2] of the agglutinating properties of certain cancerous sera, appeared to offer some prospect of being diagnostically valuable. It was soon shown by Donath,[3] Gay[4] and others that the agglutination reactions were possible with sera from non-cancerous patients.

The more recent researches have attempted to prove that there exists in the blood sera of patients affected with malignant disease, certain substance or substances, which are capable of causing destruction of the red blood cells of patients not cancerous, but only to a limited extent of the red cells of the cancerous patient. This phenomenon of "hemolysis" was early commented upon by Kelling,[5] who had observed its occurrence when sera from human cancer patients were brought into contact with erythrocytes of sheep, cows and chickens. Kelling showed that the blood sera from these cancer patients destroyed (hemolysed) the red cells of these animals, whereas the sera from normal individuals appeared to have little or no destructive effect. However, shortly afterwards, Fischel[6] demonstrated that while Kelling's observations held, in the main for certain types of cancer, there were other diseases, as severe diabetes, tuberculosis and pernicious anæmia, the sera of which destroyed the red cells of aliens.

About two years ago Weil[7] described a new method of studying the hemolytic reaction in disease. He noted, while working with "infectious lymphosarcomata" in dogs, that the salt solution extract of these tumors had little effect upon the erythrocytes of non-infected dogs, unless the tumors "extracted" by salt solution had become necrosed and broken down. In this event, the salt solution extract of the necrosed tumors caused prompt hemolysis of the sound dogs, erythrocytes. Similar conditions were found to exist where necrosis was brought about experimentally and aseptically (as by ligation of vessels) in organs non-cancerous. It was later shown that the blood sera of animals where necrotic infectious lymphosarcomata were present, contained properties which made such sera capable of destroying red cells of sound animals. It was also demonstrated at this time, that, while the sera from the cancerous dogs were capable of destroying the erythrocytes of sound dogs, they had little, if any, destructive effect upon the red cells of the cancerous dogs. In other words, the sera of infected dogs appeared to be unable to hemolyze the more or less "immunized" red cells of these animals.

The precise nature of the cell-destroying property present in the sera of cancerous animals has as yet not been determined. It has certain poisonous and irritative properties, as shown by Wade, who

demonstrated that materials isolated from necrotic tumors are capable of producing interstitial nephritis when injected into the circulation of test-animals.

It will be readily appreciated that the step from the study of the hemolytic reactions in animals to their investigation in humans was a short one. The work has been eagerly taken up in this country, notably by Weil,[8—9] Crile,[10] Wittemore,[11] Blumgarten,[12] Johnston and Canning[13] and others.

Weil's[14—15] work showed that in a series of 82 cases, 56% of sera from patients affected with advanced malignant growths were hemolytic to normal alien corpuscles. Of the cases of benign tumors examined, 33% were productive of a like hemolysis, and in 26% of sera from patients ill, but clinically non-cancerous, similar results were observed. No apparently normal sera produced destruction of alien cells. The investigations of Wittemore showed that of 109 cases tested, clinically well and otherwise, "direct hemolysis" occurred in 36% of the carcinoma cases, in 50% of the tuberculous patients—all stages of the disease—in 18% of patients affected with ailments other than cancer and tuberculosis, and in 17% of clinically well individuals. Blumgarten reports that in his series, 72% of sera from cancer patients produced direct hemolysis, while the sera from but 10% of patients affected with other than malignant disease were hemolytic.

The results obtained by Crile and his assistants have thus far been the most encouraging. These investigators report a series of 591 cases. Of this series 211 individuals were clinically well. In none of these subjects was the hemolytic reaction described by Weil obtained. In about 10% of 71 cases of pyogenic infection there was hemolysis of alien corpuscles. Of 55 cases of benign tumors, no sera were reported as hemolytic. Of 153 cases of malignant disease—all stages—the sera from 130, or 85%, produced varying degrees of hemolysis of healthy, human red cells. Of 11 cases of cancer, with clinical recurrence, 100% maintained persistence of the positive reaction. Of 37 cases, post-operative, without clinical recurrence, examined at periods of from three weeks to fifteen years after operation, none exhibited hemolytic power of their sera towards healthy alien cells. Of 52 cases of tuberculosis, 92% showed the reaction which Crile has called "reverse hemolysis," i.e., the destruc-

tion of erythrocytes from the tuberculous patients by sera from healthy aliens. Crile and his co-workers noted that the cancer cases showing no hemolysis were late inoperable growths; that cancers of the mucous surfaces showed more uniform hemolysis than did those located in deeper tissues; that in cases which had been operated upon with clinically no recurrence, the hemolytic power of the sera was lost in from twelve days to three weeks; that in cases where the incomplete operation had been performed, the serum never lost its hemolytic power; that chilling the sera appeared to increase hemolytic power, while heating it above 55 deg. C. seemed to destroy the hemolytic property.

In a very recent communication, Johnston and Canning, report results similar to those described by Crile. In the main, they claim to have used the technic described by Crile and his assistants. Three hundred and one cases are tabulated. In the cases of carcinoma (42 in number) the hemolysis (direct) was positive in 85.7%. In 9 cases of sarcoma, the direct hemolysis was determined in all cases. Two cases of endothelioma were positive. Of 14 benign tumors, the serum reaction was negative uniformly. Of 43 cases of tuberculosis, 16% showed reversed hemolysis, the remaining cases were negative. Johnston and Canning also report positive reactions in septic infections, typhoid fever, lobar pneumonia, normal individuals (error in technic?), and with Coley's fluid.

These reports by the late investigators appeared to warrant more than passing investigation of the hemolytic reaction as a diagnostic agent, for while many cases of cancer and tuberculosis are readily diagnosable by clinical means, yet there are cases where growths are situated in organs not always accessible, where such laboratory test would surely be of great import if found dependable. Either the improved technics suggested by Crile and his followers had brought about greater accuracy or the manifestations of the reaction had been misinterpreted. This applies particularly to those cases of so-called "reverse hemolysis," as in tuberculosis, where the serum of the alien is capable of destroying the red cells of the tuberculous subject. It was for the purpose of satisfying himself upon some of these points that the writer took up the work. His earlier report[16] comprised findings from the investigation of the sera from 85 individuals. Of these there were 12 cancer cases. Seven, or 58.3%,

showed positive reaction. There were two benign tumors. In neither was there a positive reaction. Of 15 cases of tuberculosis, two showed "reverse hemolysis" and one showed the typical "cancer reaction" (direct hemolysis). There were 12 cases of syphilis. The positive reaction was obtained once in these. There were 35 cases of diseases other than those quoted; 5 showed hemolysis similar to that exhibited by the cancer patients and one showed "reverse hemolysis." Of 19 normals, one showed the direct hemolysis as manifested in the cancer cases.

Since the publication of the first, and what must be considered preliminary report, the writer has had opportunity of continuing his investigation, and the final results to date furnish the basis of this communication.

The technic of the reaction has been frequently described. That suggested by Weil and Crile has been followed in the main.

Technic.—Blood is obtained from the subject, either by direct puncture of the arm veins or from the end of the finger, under aseptic conditions. It is necessary to obtain from each patient, blood corpuscles and blood serum in separate containers. In order to obtain the serum, blood is allowed to run directly into sterile test tubes. From forty to sixty drops are usually sufficient. If much serum is required for the purpose of running many sets of controls, then from five to ten cubic centimeters of blood should be obtained. This large amount can best be secured by direct puncture of a superficial arm vein. After obtaining the blood for serum, the test tube is either slanted and placed at once in the ice box, or is at once centrifuged, and after the serum has thus been mechanically separated, is then placed at icebox temperature for from twelve to twenty-four hours. It is especially requisite that serum be kept at even temperature. If the temperature fluctuates the hemolytic properties of the sera are greatly affected. The red blood cells for the test are obtained by allowing from ten to twenty drops of fresh blood to run into salt-citrate solution or into a tube or flask containing several small glass beads. In the latter event the tube or flask is gently agitated and defibrination accomplished, with prevention of clotting. It has not appeared best to us to prevent clotting in this way. There seem to be several objections. Cells are readily injured by the sharp edges of the beads, and it seems that hemolysis is more readily

brought about in them than under conditions where cells are pre-
served in salt or salt-citrate solution. Defibrination by beads is
cumbersome, the cells are sometimes separated from the fibrin shreds
with considerable difficulty, and if the shreds are not separated, it is
frequently noted that hemolysis is delayed or interfered with on
account of cells being entangled within the fibrin network. Before
using the corpuscles it is necessary to wash them several times with
normal salt solution. Sometimes it is difficult to free the cells from
fibrin when glass beads have been used. The bits may seriously
interfere with the reaction as a consequence. After washing, the
erythrocytes are placed on ice to be used when serum is available.

In the manner above described, blood serum and red cells are
obtained from normal individuals, etc. When the components of
the reactions have been thus prepared, the test is ready to set up.
As before mentioned, it has not appeared necessary to use the triple
controls suggested by Crile. It does not appear that there is any
greater accuracy in such method than when a few well-manipulated
controls are followed. The sources of error are certainly greater.
We have in all cases tested each suspected serum with at least two
normals, and against cells suspended in normal salt, and against cells
and sera in sterile water. With Crile and others we have noted that
heating sera above 55 deg. C. prevented hemolysis.

Our procedure in carrying out the test is to add to the several
test tubes successively five or ten drops of a 5% suspension of normal
red cells in normal salt solution, then respectively three or six drops of
blood serum from the cancer patient (or other subject), three or six
drops of blood serum from the normals, three or six drops of normal
salt solution, and three or six drops of sterile water. To the next
group are added, respectively, five or ten drops of a 5% suspen-
sion of red cells from the cancer patient (or other subject), and
then to the various tubes three or six drops of normal serum, of
serum from the suspected individual, of normal salt, and of sterile
water. The tubes are then thoroughly agitated. When the smaller
portions of each constituent of the reaction are used, the mixing
may be best done with capillary pipettes, after the fashion of cell
suspension mixing in the working of the opsonic index. After
thorough mixing, the tubes are placed in a thermostat at 37 deg. C.
for two hours. If the tubes are placed in a vessel containing water

in the incubator, it is possible that they may be agitated several times during the period of incubation, without interfering with the progress of the reaction. After incubation, the tubes are removed from the incubator and placed at icebox temperature for twelve hours. They should be shaken once or twice during this period. The tubes are then observed for evidences of hemolysis. This is shown by the pink coloration of the fluid above the cell débris. It is best to have the observations made by some one who knows nothing of the clinical histories of the cases being tested. If reactions are read after twenty-four hours following removal of the tubes from the thermostat, the information derived is dubious, inasmuch as hemolysis may occur in tubes containing no serum. It is rare to secure hemolysis in any tube as complete as that in the control containing sterile water, even though the hemolytic properties of the serum tests are marked.

TABLE I

| CLIN. DIAGNOSIS | PATHOLOGIC FINDINGS | REMARKS | HEMOLYSIS OF | |
			OWN CORPS	ALIEN CORPS
1—MALIGNANT DISEASE:				
Palate and cheek	Carcinoma	Late	o	++
Breast—3	"	Necrotic	o	++
Breast—1	"	Mod. adv.	o	+
Breast—2	"	Mod. adv.	+	++
Breast—2	"	Early	o	o
Lip—1	"	Early	o	+ slt.
Prostate—1	"	Early	o	+ slt.
Uterus—4	"	Mod. adv.	o	++
Uterus—1	"	Early	+	+
Uterus—2	"	Mod. adv.	+	o
Stomach—5	"	Early	o	o
Stomach—1	"	Early	o	+ slt.
Bowel—2	"	Mod. adv.	o	+ slt.
Bowel—1	"	Early	o	o
Bowel—1	"	Early	o	+ slt.
Bone—1	Osteosarcoma	Mod. adv.	o	o
Lung—1	Sarcoma	Late	o	+
Esophagus—1	Carcinoma	Mod. adv.	o	o
Gall tract—1	"	Late	+	+
2—BENIGN TUMORS:				
Prostate	Adenoma	Early	o	o
Uterus—2	Fibroid	Mod. adv.	o	o

CLIN. DIAGNOSIS	PATHOLOGIC FINDINGS	REMARKS	HEMOLYSIS OWN CORPS	ALIEN CORPS
3—TUBERCULOSIS:				
Pulmonary—11		Incipient	o	o
" —2		Incipient	+ slt.	+ slt.
" —5		Mod. adv.	+	o
" —1		Mod. adv.	o	+
" —3		Late	+ slt.	+
" and pleura—3		Early	o	o
" " —2		Old	o	o
Glands—6		No suppuration	o	o
Glands—1		Suppuration	+	+
Glands—1		Old healed	o	o
Bones—3		Mod. adv.	o	o
Bones—2		With anemia	+	+ slt.
Bones—1		Early	o	o
G. U. and general—1		Rapid progress	o	+ slt.
Bowels—1		Anemia—lung inv.	+	+ slt.
4—SYPHILIS:				
Primary—1			o	o
Secondary—3			o	o
Secondary—1			+	+
Tertiary—7			o	o
Tertiary—3			+ slt.	+ slt.
Tertiary—4		With anemia	o	+
5—OTHER DISEASES:				
Pernicious anemia—1		Mod. adv.	+ slt.	+ slt.
Pernicious anemia—1		Early	o	o
Hodgkins' disease—1		Late	o	o
Chlorosis—2		Mod. severe	o	+
Chlorosis—1		Early	o	o
Secondary anemias—2		Mod. degree	o	+ slt.
Secondary anemias—2		Early	o	o
Addison's disease—1		Early	+ slt.	+ slt.
Graves' disease—1		Anemia	+ slt.	+ slt.
Graves' disease—2		Early	o	o
Aneurysm—1		Of aorta	o	o
Aneurysm—1		Late of aorta	+ slt.	+ slt.
Cystitis—1		Hemorrhage	o	o
Tonsillitis—1		Suppuration	o	o
Tonsillitis—1		Non-suppurating	o	o
Acne—1		Diffuse lesion	+ slt.	+ slt.
Endocarditis—1		Old rheumatic	+ slt.	+ slt.
Nephritis—1		Chr. parenchym	+ slt.	+ slt.
Nephritis—1		Chr. interstit.	o	o
Nephritis—1		Chr. interstit.	+	o
Gall stones—1		Febrile	+ slt.	+ slt.
Enlarged parotid—1		Anemia	o	o
Brain abscess			o	o

| | | | HEMOLYSIS | |
CLIN. DIAGNOSIS	PATHOLOGIC FINDINGS	REMARKS	OWN CORPS	ALIEN CORPS
Arteriosclerosis—1		Anemia	o	+
Neurasthenia—3			o	o
Hysteria			o	o
Achylia gastrica		With Trichomonas intestinalis	+ slt.	o
Chorea—1		Anemia	o	o
Chronic headache		Ophthal. migraine and anemia	o	o

6—NORMAL INDIVIDUALS ALL AGES:

| Normal individual—adult—1 | | | o | + |
| Normals—23 | | | o | o |

TABLE II

Summary

CLINICAL DIAGNOSIS	NO. OF CASES	POSITIVE	NEGATIVE	REVERSE	UNDE-TERM.
Malignant disease.........	31	14	10	4	3
Benign tumors............	3	0	3	0	0
Tuberculosis	45	2	27	5	11
Syphilis	19	4	11	0	4
Other diseases............	36	5	20	2	9
Normals	24	1	23	0	0
Totals	158	26	94	11	27

We have not used extensively the capillary pipette method as suggested by Eppstein. It appears to have possibilities.

The results of our work herewith presented comprise observations upon 158 cases affected with various ailments and clinically well. The scope of the work will be seen by referring to Table I. It is not possible here to go into minute details concerning the history and the clinical findings in each individual case. Some of the cases were exceptionally interesting. Apart from the cancer cases, particular interest was attached to the findings in the cases of tuberculosis, syphilis, the anemias and those diseases with anemia.

Table II summarizes the gross results of the work.

It might be of value to say a few words with regard to the manifestations in the cancer cases. By positive reaction we understand that the normal red cells to which serum from the cancer patient has been added are destroyed (hemolysed) more or less completely, while the cancer patient's cells are not hemolysed by the addition of its own serum or the serum from the sound patient. The reactions which we have classed as "undetermined" are those where destruction of red cells took place in both combinations. By the reaction of reverse hemolysis, it will be recalled, we mean the cells of the suspected patient are hemolysed by normal or alien serum. Our work summarizes the reactions in 31 malignant tumors. Fourteen of these (45.1%) gave positive reaction. Four showed reverse hemolysis, three were undetermined and ten were negative. The cases in which positive manifestation was noted were in general late and moderately advanced lesions. This is not the rule, however, as it will be seen by looking at Table I that reactions were obtained in early cancers and not always in moderately advanced or late processes. The processes associated with necrosis seemed to cause more prompt and more distinct hemolysis, in the main, than those where the tumor masses were well preserved. Portions of the body where the circulation is perhaps less marked—as bone and prostate gland—appeared to respond slowly, even though the cancerous process were well advanced. Cancers of the uterus were accompanied in general by distinct and prompt hemolysis. The cases of cancer where the anemia was more pronounced appeared to give more definite positive reaction than those where the lesion was well confined with slight anemia. This also applies to cases where the loss of weight had been marked and rapid.

Of the three benign tumors examined none gave positive reaction. In none was the anemia or the loss of weight prominent.

The consideration of the tuberculous cases is interesting. It will be noted that 45 cases are tabulated. But two of these gave positive reaction, and only 5 showed "reverse hemolysis." All the cases showing "reverse hemolysis" were moderately advanced cases of pulmonary tuberculosis, and were all anemic, febrile and had lost weight. Eleven cases are classed as undetermined. Perhaps a more experienced observer than myself would have classed some of these

as reverses. The distinction did not appear sufficiently evident, however, in my judgment. Twenty-seven cases showed no reaction either way. To these belonged no particular type of the disease. It is interesting to note, however, that 11 were cases of incipient tuberculosis without anemia and little fever and loss of weight, and 5 were well localized lesions confined to the pleura and lungs, with fair general state. Some of the other cases with anemia—as for example tuberculosis of the bowels and bones—showed distinct hemolysis both ways.

There were 19 syphilitics examined. Four, or 21%, gave positive reaction, while an equal number were undetermined. Eleven were negative. There were no cases of "reverse hemolysis." All the cases of syphilis showing positive reaction were cases of tertiary with more or less severe anemia. The cases of visceral syphilis seemed to respond more noticeably than others.

The study of the 36 cases other than cancer, tuberculosis and syphilis is most interesting, and is perhaps the most important feature of the communication. Five of these cases (13.9%) (namely two cases of chlorosis, one case of arteriosclerosis with secondary anemia, and two secondary anemias from infectious disease) showed moderately well marked positive reaction. Twenty cases are negative. Two cases showed reverse hemolysis. These were one case of achylia gastrica with trichomoniasis and anemia and one case of chronic interstitial nephritis. In the former case the reaction was not well marked, but distinct enough to be called a hemolysis. Nine cases are classed as undetermined. A rather striking proportion is found in those disease conditions associated with anemia.

Of the 24 normal individuals (clinically well) but one case showed positive reaction. One might question whether or not there was some slip in the technic in this case, but as far as known there was no error, and the evidence must be accepted for what it is worth, inasmuch as the patient appeared to be very well at the time his blood was taken. Some old tuberculous focus or some recent infectious disease may have modified the test in a way not understood at present.

The summary shows that of the 158 cases, 26, or 16.4%, revealed positive reaction. Of these 26 cases, more than half were cases of malignant disease. The majority of the remainder were

syphilitic and tuberculous. The disease conditions generally giving positive reaction were those associated with more or less marked anemia, and in many instances with loss of weight.

Of the 158 cases tested, 94, or about 60%, were negative, while 27, or about 17%, were classed as undetermined. Some of these so classed might have been called positive by a more experienced worker. Eleven cases showed "reverse hemolysis." The greater number of these were tuberculous—moderately advanced cases with anemia—but a fair proportion of "reverse hemolyses" was obtained in the cases of malignant disease.

It would appear, then, from this brief consideration of the work of others and the results we submit that certain facts are brought forward prominently. It seems that in the blood serum of some cases of malignant disease—those generally associated with anemia and loss of weight—there exists a hemolytic property for alien red cells. It also appears that while this fact is interesting and may be of value in certain individual cases, similar manifestations are possible from the sera of patients non-cancerous. We have herewith called attention to this manifestation in cases of tuberculosis, syphilis and other disease conditions. It will be noted, however, that the conditions where this direct hemolysis is obtained are those frequently associated with anemia, loss of weight and cachexia. We have not noted that the reaction of reverse hemolysis mentioned by Crile as occurring in 92% of cases of tuberculosis is characteristic. It occurs occasionally but is by no means characteristic, inasmuch as we have shown that it also occurs in malignant disease, syphilis and other diseases. As Crile suggests, our work also shows that the transfusion of blood from one individual to another in cases of emergency is a dangerous procedure unless previously the hemolytic reactions of the two sera have been noted. In conclusion, it should be emphasized that while the main mass of data is at present against the hemolytic reactions, being characteristic for any single class of disease, yet the large number of cancer cases showing this reaction should urge us to seek modifications of the method in the hope that study of various sera along other lines will lead to the firm establishment of a specific reaction for cancer and other disease conditions which seem to have specific pathology.

The writer's thanks are due Profs. de Nancrede, Peterson, Loree

and Vaughan and Drs. Kollig and Witter for opportunity of carrying
on the work here outlined and for suggestions.

REFERENCES

1. British Medical Journal, 1900, Vol. I, No. 17.
2. Münchener medizinische Wochenschrift, 1901, p. 1239.
3. Wiener klinische Wochenschrift, 1900, p. 497.
4. Proceedings of the Society of Experimental Biology and Medicine,
      1907, p. 14.
5. Berliner klinische Wochenschrift, 1907, p. 1355.
6. Berliner klinische Wochenschrift, 1908, p. 882.
7. Journal of Medical Research, 1907, p. 287.
8. Proceedings of the Society of Experimental Biology and Medicine,
      1907, p. 25.
9. Journal of the American Medical Association, Vol. I., 1908, p. 64.
      Proceedings Am. Assn. for Cancer Research, N. Y. City, Nov. 15, 1907.
10. Journal of the American Medical Association, 1908, Vol. L., p. 1883,
      and 1908, Vol. LI., p. 2036.
11. Boston Medical and Surgical Journal, 1909, No. 2.
12. Medical Record, 1909, April.
13. Proceedings of the Pathological Section. June, 1909. Meeting A. M. A.
      (not yet printed).
14. The Archives of Internal Medicine, 1908, Vol. I., p. 23.
15. The Journal of Medical Research, 1908, Vol. XIX., No. 2., p. 281.
16. Medical Record, N. Y., Nov. 27, 1909.

DIAGNOSIS OF DISORDERS OF THE CEREBELLAR APPARATUS

By TOM. A. WILLIAMS

Washington, D. C.

Sherrington[1] has given the name proprioceptive system to that
part of the nervous apparatus which is specialized to receive impres-
sions as to the position and condition of the body itself irrespective
of external stimuli.

Anatomy.—The system of nerves of which it is composed arises
in end-organs situated in tendon, aponeurosis, muscle, and perhaps
cartilage, bone and subcutaneous tissue, as well as possibly in the
parietes of the body cavities, although this is not yet definitively
known. At all events, the impressions are conveyed in fibers most

of which accompany the motor nerves until they leave them to enter the intervertebral ganglia on the posterior roots of the spinal cord. The fibers then enter the spinal cord via the posterior roots. Their course from this point is only in part ascertained. It is certain that some of the impulses eventually pass upwards homo- and contra-laterally in the dorsal and ventral direct cerebellar tracts respectively, having first passed through a relay neurone, probably in the column of Clark. Some observers believe that other impulses of the proprio-ceptive system run in the posterior columns as far as the nuclei of these in the medulla oblongata, and that from there, the impulses proceed in the arciform decussation until they partly in turn reach the cerebellum, like the direct tract, in the restiform body, and partly, along with the ventral cerebellar, accompany Gowers' tract and then that some pass through the brachium conjunctivum, others proceed-ing by the brachium pontis.

But it is difficult to determine this, for it is quite certain that the main part of the impulses passing along the dorsal columns are those which subserve the conscious sense of attitude, while in the main the spino-cerebellar impulses do not directly affect conscious-ness, although Van Gehuchten[2] believes that even the common sen-sory tract passes in part via the cerebellum, to eventually reach the cortex through a cerebello-fugal path which decussates in the brachium conjunctivum en route to the opposite cortex. This view, however, is not generally accepted.

The impulses which reach the cerebellum in these various ways are there coordinated; and as a result of their impression, efferent impulses pass from the Purkinje cells on their way to regulate body tonus and position in accordance with the information gained.

The efferent tract first reaches the dentate body; and it from there intromits via the brachium anterius with a second relay neurone in the red nucleus of the opposite side, whence it again decussates in Forell's bundle and passes through the tegmental region of the mesencephalon, becoming more ventral and lateral in the pons, bulb and cord, in the latter more or less commingling with the anterio-lateral portion of the lateral pyramidal motor tract, and is supposed, with it, to mediate the activity of the motor cells in the anterior cornua of the spinal cord.

It is supposed that other cerebello-fugal fibers control the

ponto-bulbar nuclei in a similar manner, and thus regulate the activities of the muscles supplied by the motor cranial nerves. But the information by which the position of head and eyes is mainly regulated has another organ much more sensitive than the end-bodies in the extremities, neck and trunk. This is situated in the membranous labyrinth and consists of the terminations of the vestibular nerve there. Impressions are communicated to this by the movements of the endolymph within the utricle and semicircular canals. Thence they pass via the vestibular nerve to the nucleus of that name in the medulla, and from there probably in the lateral lemniscus and brachium conjunctivum to the homolateral and contralateral cerebellar lobe and vermis; some of them, however, pass to the opposite oculomotor nuclei, and others directly to the nuclei of Deiters and von Bechterew.

Physiology and Pathology.[3]—The receptive function of the cerebellum is firstly orientation of the different parts of the body with regard to one another, and secondly perhaps a participation in the orientation of the body to its surroundings. It is possible, however, that this latter function is entirely cerebrospinal and that the importance of the cerebellum in relation to it is confined to its proprioceptive aspect.

What Sherrington calls the ejicient function of the cerebellum is that in virtue of which it coordinates and harmonizes body, head and eye movements by means of its efferent fibers. It is in this way that the equilibrium of the body is automatically regulated.

Thus, the disorders of the cerebellar apparatus lead to disorientation and disequilibrium. And it is the disorder of these together which constitutes vertigo. This is defined by Grasset[4] as "a subjective psychical phenomenon constituted by the transmission to the center O* of a double basilar sensation (mesencephalic and

*By the symbol O, Grasset[5] represents what he calls the superior psychical center or centers in which consciousness is achieved. He distinguishes these from other cortical centers which only subserve sensibility and psychomotricity and even coordinate action and ideation when these are only automatic or subconscious and which he designates by the symbol O, the *polygon.* He believes that this schema represents a real hierarchy of the nervous centers. It is a restatement of the "high and low-level" hypothesis of Hughlings Jackson.[6] Recent studies of apraxia have added concreteness to this conception; but the phenomena of hysteria and so-called psychical

cerebellar), a false sensation coming from the apparatus of orienta-tion, and a sensation of insufficience of the automatic centers to assure the equilibrium." Pierre Bonnier,[10] on the other hand, sepa-rates the two elements thus united by Grasset, and distinguishes vertigo from a vertiginous sensation, while Hughlings Jackson[11] gives the name of vertigo only to the motor element, that is the beginning of the fall.

However, intellectual assent to the illusion of displacement of objects or autorotation cannot be regarded with Pierre Bonnier as essential. The real essential is not an intellectual belief in one's dis-orientation, but a sentiment of loss of equilibrium; for this may be felt in bed when the patient knows perfectly that he is not falling. Thus true vertigo cannot occur except from disorder of the cere-bellar apparatus, which is the organ of both the functions the per-turbation of which constitutes vertigo.

In addition to these essentials, accessory and inconstant phe-nomena may accompany vertigo. Some of these are due, following Bonnier, to the overflow of highly charged nerve centers when powerfully stimulated, their ensemble constituting the bulbar syn-drome[12] which he described. For instance, when the vestibular nerve is powerfully irritated, as by extension of otitis media to the labyrinth, the turning sensation and loss of equilibrum may be ac-companied by nystagmus or even conjugate deviation from stimula-tion of the oculo-motor nuclei which are intimately connected with the vestibular nucleus by means of the posterior longitudinal bundle. If the stimulus extends to the pneumogastric nucleus, nausea, vomit-ing, palpitations, dyspnea and even syncope may occur. Noises in the ears are very common, even when the irritation does not originate auricularly. These bulbar phenomena are very often characterised by the state of angoisse, with acute distress, horror and fear of im-pending death such as to resemble angina pectoris.

The source of vertigo is detected clinically by its aggravation

disaggregations upon which Grasset largely based his schema can no longer be considered as supporters of his hypothesis, now that the work of Babinski,[7] Sidis[8] and Bernheim[9] has shown the fallaciousness of the data by which they were explained; so that Grasset's schema, like those concerning the centers for speech, is dangerous to the uninitiated in that it tends to make one force the facts to fit the fancy.

through putting into action of the organ at fault, and its cessation or improvement when that organ is at rest: thus labyrinthine vertigo diminishes when the patient is quiet in bed, ocular vertigo when the eyes are closed, vertigo of gastric origin when the stomach is at rest, cardiac vertigo when strain on the heart is diminished, and so on; while vertigo of central origin is not attenuated by any of these means in particular.

The seat of this disorder need not be in the cerebellum itself; a lesion in any of its peduncles is as effective; so that in the case of intracranial neoplasm, vertigo is a localizing sign only in a very broad sense. Thus the vertigo of insular sclerosis is usually due to patches situated in the pons or other brachium, rather than to a lesion in the cerebellum itself.

The vertigo occasionally found in tabetics is really a peripheral one due to the implication of the vestibular nerve in the meningeal process which causes tabes of the posterior columns by implicating the posterior roots. When the labyrinthine impulses are thus interfered with, the test with voltaic electricity is applicable. This is performed by placing one pole of a galvanic battery over each mastoid process. In the normal individual, the head deviates, as soon as the current is closed, towards the positive pole; while there is felt a sensation of surrounding objects being displaced towards the positive pole. If either labyrinthine apparatus or center is interfered with this phenomenon does not occur when the positive pole is placed on the diseased side. These sensations and movements are accompanied by nystagmus towards the positive pole.

Other means of exploring the vestibular function are the irrigation test of Barany[13] and the rotation platform, in which nystagmoid movements occur long before vertigo is produced. When a person is seated on a platform revolving towards the right, the eyes will be observed, or better felt, to make a series of rapid rhythmical movements in the same direction as that in which he is turning, after each jerk returning more slowly to the mid position. After a few seconds, these movements cease until the platform ceases to turn, when they recommence, but in the opposite direction. These movements are dependent upon the inertia of the endolymph, as was shown experimentally by Ewald.[14] Their non-occurrence signifies interference with vestibular function, provided of course the oculo-motor

apparatus is intact. The right labyrinth is the main controller of rotation to the right and vice versa, as the following case shows:

After an accident, a workman felt out of sorts, but had only slight pain on side of head; but on questioning, he admitted sounds in the ear and vertigo when upright, objects seeming to turn from left to right. On testing, there was very little nystagmus in rotation to the right, but much more after rotation to the left. The confirmation of the lesion of the left vestibule was gained by a demonstration of diminished perception of sound in the left ear, both to aerial and cranial conduction[15] (Goldman of Cairo).

The irrigation method does not depend upon pressure, but on temperature. Cold water causes nystagmus towards the opposite side, but the test is less responsive than that with hot water at 40° C. unless the tympanum is perforated. These effects are explained by the induction of currents in the endolymph by the change of temperature. Thus, cold water causes a current from the top of the anterior semicircular canal to the ampulla below; and hence when the right ear is injected, a rotation nystagmus to the left is produced. It is only when the head is leant on the shoulder so as to tilt the horizontal canal into a more vertical plane that this test causes lateral nystagmus: because in the horizontal plane gravity does not displace endolymph even when its density is changed by our test. Thus the test is in reality a mechanical, and not a thermal one. There is a strong probability that some cases of drowning are due to the vertigo produced by stimulation of the labyrinth through the cold water entering the ear.

Tests and Diagnosis.—As may be readily imagined, the disorders of so extensive and complex a function should be frequent, and should manifest themselves clinically. They may be summed up in the term physical disorientation total or partial, global or focal; and the most familiar example is the staggering walk of intoxication. Less frequent, though more dramatic, is the sudden fall of Menière's disease, in which the patient, suddenly deprived of knowledge as to the position of the head, is utterly lost, and hence falls in a heap. Both these examples signify interference with the afferent cerebellar function.

When the efferent[16] function is interfered with, muscular tonus is completely lost, and the deep reflexes disappear. Moreover, there

develops an incapacity to rapidly alternate movement—adiadocokinesis; and the synergia of different muscles is much impaired; so that a coordinate movement of two or more joints is only performed slowly and jerkily—coarse intentional tremor. At rest, on the contrary, the power of immobilization is much increased. Although there is no actual weakness, yet a virtual asthenia arises from the atonic state of the muscles. The effort needed to overcome this produces rapid fatigue.

The result of the asynergia is the clumsy infantine walk which the patient adopts for safety and the extensive shaking of the hand when any movement is attempted, often preventing writing or even the use of a knife and fork. The same asynergia, affecting the tongue, palate and facial muscles, produces slow, monotonous, toneless and sometimes palatal and explosive speech. It is shown in the eye muscles by nystagmus. If dysergia is only slight it may be elicited by—

a. Rapid pronation and supination of the hand being more slow or clumsy on the affected side.

b. By failure to bend the knees when the patient from the standing position is made to lean far back.

c. By a jerky and needlessly high lifting of the knee when the patient endeavors to kneel upon a chair.

d. By a tendency of the thigh to flex when the patient sits up from recumbency.

e. By the usual finger to nose test, which often reveals the tendency to pass the point aimed at, the hand sometimes violently knocking the face.

f. When the patient, in drawing a straight line, tries to arrest the movement at a fixed point, he will be unable to do so, the pencil traveling beyond. I have devised a practical application of this test as follows: A horizontal line is drawn across a piece of paper. A perpendicular is let down from its left extremity. Three vertical marks are made at equal distances along the horizontal line. The patient is then directed to draw, beginning at the vertical line, three horizontal lines, one below the other, and each stopping abruptly at the 1st, 2d or 3d vertical mark, respectively. They must be drawn rapidly, and each with a single movement. The normal person will pass the limit only very slightly, and will make hardly any

returning stroke or movement of the arm. Cerebellar dysergia is indicated by excessive length, and especially by a too great movement of recovery whether the paper is marked or not.

Increased power of stabilization often characterizes cerebellar cases. It is ascertained by placing the patient on his back with his legs raised in the air and noting the ease and duration of maintenance of an attitude difficult and fatiguing for normal individuals, in whom, moreover, there is always a certain amount of rocking to and fro, whereas the cerebellar case appears motionless.

This test is a very valuable one against the ataxia of tabes dorsalis, in which condition the tendency to oscillate from the stationary position is much exaggerated.

From ataxia in general, dysergia of cerebellar type can moreover be differentiated by the effect of vision upon the patient's movements. True ataxia is much accentuated when the patient closes his eyes, which procedure does not influence dysergia due to interruption of efferent cerebellar impulses. Again, a tabetic, when he will, can arrest any movement at any point desired, provided that he receives knowledge of the whereabouts of his limb by another sense than that of attitudes, which in him is impaired. It is upon this principle, indeed, that depends the commencement of the Fraenkel method of reeducation by graduated movements. The cerebellar, on the other hand, does not appear to be reeducable, to judge from the few chronic cases which have been carefully enough observed.

Another character of tabetic ataxia is its irregularity, which distinguishes it from the mere unmeasuredness of the movements of the cerebellar patient, in whom the walk is like that of the drunkard.

Another valuable distinction is that in the standing position the cerebellar case merely oscillates as if balancing, the feet remaining tranquilly on the ground and there being none of the violent muscular contractions which are seen in the legs of a tabetic when endeavoring to stand. It is thus entirely erroneous to give the name ataxia to the results of a defect of the cerebello-fugal system.

The combination of an exaggerated static equilibrium, sometimes cataleptoid in degree, with dysergia leading to intentional tremor produces a singular clinical picture, in some respects resembling that of paralysis agitans with intention tremor.

The distinction of the cerebellar syndrome from ataxia is no

mere academic one, but is of enormous clinical importance in certain affections, as it enables the physician to diagnose the site of a lesion which he might otherwise fail to locate.

But of course the cerebellar syndrome in its purity does not indicate the level at which the cerebellar apparatus is implicated: it does not inform us whether the fault is in the cortex of the cerebellum, the radiations in the white matter, Deiter's nucleus, the brachium conjunctivum, the nucleus ruber, or in the rubrospinal tract whether in mesencephalon, pons, medulla or spinal cord. The method of finding this out is that employed in locating lesions in the psychomotor, sensory or any other physiological tract-system of the cerebrospinal axis. It is a topographical method, consisting of a clinical study of physiological systems contiguous to the one manifesting symptoms. Thus in the cord, when extra cerebellar, the rubrospinal tract can hardly be affected without implicating the pyramidal fibres, and thus producing spasticity, hyperactive reflexes, combined flexion or other homolateral anergias, and most important of all the hallux extension when the sole is stroked.

Moreover, the Gower's column may be implicated and give rise to contralateral sensory dissociation of the syringomyelic type, the cutaneous position of which will indicate the cord level of the lesion, which is at a point about seven segments higher up than the uppermost segment of the cutaneous loss.

When the lesion is in the bulb, the roots or nuclei of the 12th, 11th, 10th and 9th cranial nerves are hardly likely to escape; and one may look for atrophy of the tongue, respiratory symptoms or insufficiency of the trapezins, sternomastoid or laryngeal muscles. Higher up still, towards the pons, anomalies of the facial and abducens innervation may guide us, or the vestibular function may be affected at its relay neurone here. Still higher, in the mesencephalon, the pathetic and oculomotor nerves may become involved at their origin, and the optic fibers themselves may be implicated near the colliculous by the lesion. In any part of its long course, the central origin of the 5th nerve may participate; and in a similar way the lemniscus may be shown by sensory loss, and the psychomotor tract by perturbations of the motility to be symptomatically involved by the transverse extension of a lesion of the rubrospinal tract.

When no localizing symptom of this kind is found, marked dysergic symptoms are very apt to be localized in the cerebellum itself. Now the cerebellum is a homolateral organ, and hence the symptoms may be entirely onesided, a great help in diagnosis; but even in this situation, we have means of localization more certain than exclusion; for a lesion within the cerebellum large enough to produce dysergia is generally large enough to affect the intracranial circulation either directly or by causing an increase of subtentorial pressure. This causes ventricular dilatation, and gives rise to the well-known picture so conspicuous a feature of intracranial neoplasm. It is constituted clinically by headache, nausea, projectile vomiting, etc.; but the consideration of these features is another chapter of neural semeiology.

The Diseases which produce dysergia.—I conclude with a short statement of the conditions in which disorder of the cerebello-fugal apparatus is most frequent.

Disseminated sclerosis. The alert reader will have been struck by the resemblance of the clinical picture to that of insular sclerosis, of which the slow, explosive speech, the nystagmus and the intentional tremor are indeed indices of the incidence of the multiple sclerosis upon the rubrospinal tracts.

Paralysis agitans. The tremor, slow and toneless speech, fixed facies and antero latero- or retro-pulsion of Parkinson's disease are all symptoms referable to the cerebellar apparatus. And the lesions of the brain stem shown by Spiller and Camp[17] may well account for this.

Paresis. Frequently the walk of the general paralytic has a cerebellar character, with its wide-apart feet, festooning pattern and uncertain tendency. It is explained pathologically by recent researches,[18] which have shown that the cerebellar cortex invariably takes its place in the general meningo-encephalitis of this disease.

Tumors. To neoplasms I have already alluded; and analogous remarks might be extended to intracranial abscess.

Hereditary maldevelopments. Finally, the congenital agenetic affections must be borne in mind; for though cases have been reported which came to autopsy with marked cerebellar atrophy which had never produced the least clinical sign, yet, there is a group of familiar dystrophies allied to Friedreich's ataxia in which the cere-

bellum is conspicuously abnormal and which does exhibit symptoms in life similar to those described in the preceding pages.

Toxemia.   Finally, intoxications may produce a syndrome made more complex by perturbations of the cerebellar apparatus.

Thus, the cerebellar syndrome, clear cut though it be, is no exception to the common complexity and difficulty of the diagnosis of disease.   Its knowledge gives us another arm, to learn the use of which still more study and skill are exacted of the physician of our day.

REFERENCES

1. The Integrative Action of the Nervous System.   London and New York, 1906.
2. Anatomie du Système Nerveux de l'Homme.   Brussels, 1907.
3. See the writings of Luciani, Sherrington, Siermerling, Thomas, Borgherin and Duchenne.
4. Les Maladies d'Orientation et d'Equilibre.   Paris, 1901.
5. Les Centres Nerveux.   Paris, 1905.
6. Evolution and Dissolution of the Nervous System.   London, 1888.
7. Le Démembrement de l'Hysterie, Semaine Méd., Jan., 1909.
8. Hysterical Hallucinations, Psychological Review, 1904.
9. Hypnotisme, Suggestion, Psychotherapie.   Paris, 1903.
   See also the author's Considerations on Hysteria, International Clinics, Autumn, 1908.   The Trend of the Clinicians' Concept of Hysteria, Boston Med. and Surg. Jour., March 25, 1909.   The Clarification of Hysteria, Monthly Cyclopedia of Med., April, 1909.   The Essentials of Hysteria, New Orleans Med. Jour. and Canadian Med. Jour., May, 1909.   The Differential Diagnosis of Neurasthenia, Archives of Diagnosis, 1909, etc.
10. Le Vertige.   Paris, 1904.
11. Brain, 1907.
12. Le Syndrome Medullaire, Congrès de Neurol. de Pau, 1904.
13. Physiologie und Pathologie des Bogengangapparates beim Menschen. Leipzig und Wien, 1907.
    Untersuchungen über den vom Vestibularapparat des Ohres reflektorisch ausgelösten rhythmischen Nystagmus und seine Begleiterscheinungen. Berlin, 1906.
14. Das Endorgan des Nervus Octavus.   Wiesbaden, 1892.
15. Archives Générales de Méd., Aug., 1909.
16. Perturbation des Functions de l'Appareil Cerebelleux.   Revue Mens. de Méd. Interne., May, 1909.
17. Bull. University of Penn., 1906.
18. Lésions du Cervelet dans la Paralysie Générale.   L'Encéphale, 1907.

ON CHANCRE DIAGNOSIS

By WILLIAM S. GOTTHEIL

Adjunct Professor of Dermatology, N. Y. Post-Graduate Medical School
and Hospital; Dermatologist, City and Lebanon Hospitals;
Consulting Dermatologist, Beth-Israel and
Washington Heights Hospitals, etc.

New York

There is probably no single diagnostic point on which the interests of physician and patient are so entirely at variance as the decision concerning the nature of a suspicious lesion of the genitals. The patient wants an immediate answer, to relieve his mind from an uncertainty that is harder to bear than the most dreaded of facts; treatment must be begun at once, since every day or hour lost may mean unnecessary exposure to an uncombatted infection; and in most cases he is entirely unable to appreciate the reasons for his examiner's delay. The physician, on the other hand, knows the difficulties of the diagnosis and the dangers of error; he is aware of the facts that the lapse of a short period of time will clear up the matter, and that the patient will lose nothing by the delay; and he feels that the interests of both parties are best conserved by waiting. In many internal affections there is the same element of doubt; but here the patient is readier to recognize the difficulties in the way of positive assertion, is less alive to the presumed dangers of delay, and is willing to wait until a decision can be reached. The patient with a possible chancre goes to the man who tells him what he is affected with; and in but too many cases that is the man who calls every abrasion and herpetic erosion a chancre, and treats him for syphilis. We can hardly blame the sufferer for not having the fortitude to wait and do nothing whilst a decision so fraught with momentous consequences for him is in the balance; but our sympathies are with the practitioner who is confronted with an emergency of this kind.

I have in the past advocated an expectant attitude as the only one that we can assume, either from a scientific or an ethical view-

point.[1] For on the one hand the chancre or sclerosis, even when
apparently typical, can only give us a "probability" diagnosis, for
there are other lesions that under certain conditions simulate it to a
nicety.[2] Besides this too early an institution of treatment—and what
patient would not insist upon treatment after a positive diagnosis has
been made—might well prevent the appearance of the corroborative
symptoms which alone unmistakably brand the suspicious lesion as
the first sign of systemic lues.   On the other hand, to subject a
patient to all the penalties, physical, social and moral, that are im-
plied by an infection of this kind, is absolutely indefensible save in
case of absolute certainty of its existence. We have all known lives
that have been wrecked in this way; and it will be an interesting
study for some future syphilographer to compare the damage done
by syphilophobia and syphilomania with that actually occasioned by
the infection.

The discoveries of the last few years in the syphilitic domain
have been revolutionary; and in no department of it more so than
in that of diagnosis. We have gained recently two additional methods,
one at least of which is applicable in the very earliest stages.   It
becomes necessary, therefore, to revise our position in regard to the
diagnosis of the initial lesion. If in addition to the ordinary physical
appearances and signs which cause us to suspect that a given lesion
is a sclerosis, the new test, examination for the spirochæte, which
can be made at once, is decisive if positive. If it is negative, it is a
point against the diagnosis of chancre, though it does not necessarily
exclude it; for, as in all such cases, there are possible inevitable
elements of error. We have a new sign for the advent of
which we need not wait, and which in a very large proportion of the
cases will enable us to come to an immediate decision.

It will be well to discuss the new factor in chancre diagnosis in
connection with a consideration of the clinical forms of the initial
lesion, and the other conditions that simulate it.   Now the sclerosis
or initial lesion of syphilis, like the later manifestations of the disease
in the skin, mucosæ, and internal organs, is a tumor, a small round-

[1] Syphilis: Its Diagnosis and Treatment. Englehard & Co., Chicago,
1901, p. 33.

[2] Pseudo-Chancre. N. Y. Medical Journal, September 28, 1895.

Fig. 1. Dry Scaling Papule   Fig. 2. Large Induration
                        Fig. 8. Ulcerated Lesion
                        Figs. 5 and 6. Mixed Chancre
Fig. 4. Parchment Chancre   Fig. 7. Chancroid

ON CHANCRE DIAGNOSIS
William S. Gottheil

celled accumulation that marks the reaction of the tissues to the irritant microorganism which has been implanted and is proliferating there. The syphiloma is similar to the tuberculoma or leproma; so that in a general way, and apart from the microbic elements present, the microscopic differentiation of these conditions is often a matter of difficulty or impossibility. Accidents of location, and accidental happenings, more especially those of the nature of added and secondary infections, change the appearance of these lesions considerably; but they always remain tumors. Inflammatory irritation may be superadded; ulceration may occur from superimplantation of chancroidal, ordinary purulent, or other microorganisms; but careful examination will always reveal the fact that the essential lesion is an increase of tissue, a tumor. Of course, the spirochæte may be implanted on an already existent lesion, as a herpes or an ordinary erosion, or inoculated at the same time as an ulceration-causing microorganism as the Ducrey bacillus, which shows its effects in a very short time. In these cases we get ulcerations without tumor formation, which may extend, remain stationary, or heal up; but when the time of primary incubation of the syphilitic organism is over the characteristic induration appears in the margins and base of the ulceration, or in its scar.

Now the initial lesion of syphilis may appear in one of several forms sufficiently different from one another to merit careful consideration. They are:

1. *The Dry Scaling Papule.* (Fig. 1.) This occurs especially upon dry surfaces, and is not infrequent in extragenital infections and on the labia majoræ. It appears as an insignificant, lenticular, brownish, hard nodule, non-ulcerating, but soon becoming covered with fine dry scales. It usually comes from 14 days to 3 weeks post infectum, causes no subjective symptoms at all, lasts for a few weeks, and then disappears leaving a slight pigmentation but no scar. The absence of inflammatory reaction, ulceration, or pain, renders it probable that this is the form of all others most commonly overlooked by the patient, who can truthfully say that he has never had a sore. It is overlooked occasionally also by the physician; for the induration, whilst evident enough to the practiced finger, may be very slight in amount.

2. *The Large Induration.* (Fig. 2.) This is really an exaggera-

tion of the first form, and may be regarded as the typical chancre, though it is by no means the commonest. A large indurated mass appears at the site of inoculation; it is painless, with unbroken integument; it grows slowly to the size of a bean or a small nut; it disappears slowly after remaining stationary for a few weeks; and it leaves a distinctly atrophic and, perhaps, pigmented area behind it. It is less liable to be overlooked than the scaling papule, on account of its size; yet this undoubtedly does happen with careless people. It represents the spirochæte implantation unchanged by either external irritation or other infection.

3. *The Eroded Papule or Tubercle.* This is the commonest form of the initial lesion, being the first or second forms with epithelium denuded surfaces. The elevation varies, depending on the amount of induration; the surface is red and moist, but not exulcerated, and may be covered with a grey film. Mechanical or medicinal irritation is the usual cause of the erosion.

4. *The Ulcerated Lesion.* (Fig. 3.) This is the true ulcus durum or Hunterian chancre; a tumor of varying size with a deep central ulceration. The edges of the loss of tissue are sloping, and not undermined; secretion is very scanty; and the comparative insensitiveness is a marked feature. The loss of tissue is due to the secondary infection with pus organisms of an eroded papule or tubercle.

5. *The Sclerotic Edema.* A very rare form of initial lesion, occurring where there is much loose connective tissue, as on the labia or prepuce. There is a large painless swelling, dark brown or violacious in color, and of a peculiar elastic hardness, less marked than that of the typical sclerosis, but greater than that of ordinary edema. It leaves no scar, but a permanent thickening of the tissues.

6. *The Parchment Chancre.* (Fig. 4.) This is an insignificant and superficial lesion that is doubtless often missed; it is commonest on the glans, vestibule, and the inner surface of the labia minora. It appears as a brownish-red, varnished, very superficial erosion, resembling, when on the penis, a balanitis. The induration under it is extremely tenuous, feeling merely like a piece of thick paper or parchment, and requiring skill for its detection. It heals readily, even without special treatment, leaving no scar, but only a livid spot behind.

7. *The Mixed Chancre.*   (Figs. 5 and 6.)   Here the lesion partakes of the characteristics of both chancre and chancroid.   Both viruses have been implanted at one and the same time; but the Ducrey bacillus develops first, an inflammatory papule appearing at once post infectum, soon becoming a pustule, rupturing, and ending in a spreading chancroidal ulceration.   There is a red, angry ulcer, extremely tender, suppurating freely, and with the characteristic ragged base and undermined edges of the soft sore.   After about three weeks the induration appears, raising the base and edges of the ulcer.   Suppuration lessens, tenderness decreases, and the granulations become brown and varnished.   The course after that is that of the ordinary ulcerated lesion.

It is apparent that these are not real varieties of the initial lesion, but are differences due to the tissue on which the virus is implanted, or to irritation or mixed infections.   It may even happen that a single lesion may be of more than one variety, or change from one to another in a short time.   The dry papule may become eroded or exulcerated; the parchment chancre may later take on a characteristic induration.   And when the infected site is at the boundary line of two tissues of varying density, the lesion will in each of them be of appropriate character; thus in a chancre of the sulcus extending on to the glans the sulcus part will be hard and nodulated, while that on the glans itself will be of a parchment variety.   The only importance of the differentiation is to emphasize the varying appearance of the initial lesion of syphilis.

Thus the first visible manifestation of the luetic infection may be an insignificant papule, an eroded mass, an ulceration of varying size and features, an edematous swelling, or a mere epithelium-denuded area.   The intrinsic features on which the diagnosis must be made are the tumor or induration, the ulceration, the microscopic examination, the subjective symptoms, and the history, mentioned in the order of their importance.   The extrinsic symptoms are the first signs of systemic infection, the local adenopathy, the general adenopathy, fever, cephalalgia, angina, roseola, etc.   They are characteristic enough, but unfortunately they only appear after the initial lesion has been present for some time, and are therefore not available for the early diagnosis of a suspicious sore.

A.   The Induration.   Too much importance is attached to this

symptom, especially by those unused to the differential palpation of tumors of this kind. It is true that the peculiar tense hardness, when present and marked, is characteristic as far as it goes; but it may be almost absent, is often slight in amount, and may be closely simulated by a purely inflammatory swelling. It is difficult to detect in the parchment chancre and the sclerotic edema; in the mixed chancre it is masked by the extensive inflammatory swelling occasioned by the chancroidal infection; and in any sore that has been prematurely cauterized, especially as too many of them are with repeated applications of silver nitrate or carbolic acid, the local conditions often become such that induration cannot be positively recognized. On the whole, we can say that it is a symptom of great value when present and characteristic and recognized by the expert; and that it has comparatively little value when absent or not characteristic, especially in lesions that have been locally treated.

B. *The Ulceration.* As we have seen, this is no essential part of the chancrous "symptom-complex"; ulceration is always an epiphenomenon in the primary syphiloma, as it is in the later tumors of the same nature and in those of lepra, tuberculosis, carcinoma, dermatitis, etc. When it does occur, however, it is fairly characteristic. We have an indolent, non-sensitive lesion with a red and glairy base, secreting scantily if at all, insensitive, with sloping edges and a brown tumorous border.

C. *The Spirochæte.* I have placed this third in the list of intrinsic features, not to minimize its prime importance when found, but because it has not been always found, even by competent observers, in undoubted and subsequently proved scleroses, and also because it is a means of diagnosis that is not accessible to all practitioners. Its importance merits more detailed consideration.

In true typical genital chancres we can group the results obtained by Levaditi and Roché, Krauss and Prantscheff, Oppenheimer and Sachs, and Thibierge and Revaut, all competent observers, who found the spirochæte in 90 out of 121 cases. In the less typical forms, and in mixed chancres, the results were much less constant; and in the extensively ulcerated and the gangrenous lesions the presence of pus organisms, fuso-spirillæ, etc., in excessive quantities often rendered the findings inconclusive. And this is in the hands of experts; reports as to the presence or absence of the microorganism by those

not especially skilled are of but little value; negative findings, even by experts, are inconclusive. The value of spirochæte findings in the diagnosis of the chancre may be summarized as follows: When made by an expert, and positive, they are as important and decisive as the appearance of indubitable secondary symptoms; if they are negative, they have weight as against the specific nature of the lesion, but are not conclusive.

D. The Subjective Symptoms. I attach considerable practical importance to these, for they are marked and readily elicited. The pure chancre is a perfectly painless lesion, and can be examined and handled at will, and even the infected or mixed chancre is only moderately tender. The pure chancroid, on the other hand, is not only intensely sensitive, but is spontaneously painful; and even with an irritated herpes or non-specific erosion pain and tenderness are marked symptoms.

E. The History. I place this last from the conviction because it is not only of minor importance, but because it is also a frequent source of error. As in most cases of syphilis diagnosis, the right principle is to decide according to the objective evidence; and if, after that, the history does not agree with the diagnosis, so much the worse for the history. In other words, the patient's story as to intercourse, time of appearance of the lesion, etc., is so liable to errors of intent, observation, and memory, that its value is merely secondary and corroborative. If, however, there is a plain story of the appearance of the lesion not less than 20 days after a suspicious intercourse, and especially of one affected while under the influence of liquor, or in which some lesion or abrasion of the genitals occurred, it may be accepted as helpful in the diagnosis.

The extrinsic symptoms are definite and decisive enough; but, unfortunately, they do not appear until the local lesion has been present at least 3 weeks or more. The one that comes first, and is of most importance for the early recognition of the lesion, is often missed; and, together with the blood test, deserves especial consideration.

F. The Local Adenopathy. This must not be confounded with the later general adenopathy. It is an indolent polygangliar local adenopathy, and is the first symptom of the systemic spread of the disease. At the end of the 3d week after infection, and often not

more than 8 or 10 days after the induration, there is a painless or at the most an uncomfortable swelling of the entire chain of lymphatic glands connected with the area of the sore. They appear as nut-sized or larger isolated, peculiarly hard swellings, a pleiad of glands, often connected with the sclerosis by inflamed lymphatic channels. Usually, of course, the superficial inguinal chains are affected; when the lesion is on one side they are unilateral; when it is central they appear on both sides.

G. *The General Adenopathy.* This appears, of course, after the local adenopathy, and is different in character. The actual swelling is less; but all the accessible lymphatic glands are palpable as hard, insensitive swellings. No importance is to be attached to any one set of glands in this connection; the epitrochlears are no more significant than the infraclaviculars, and the diagnostic value commonly attached to the former is an error. As a matter of fact a localized adenopathy anywhere remote from the site of the initial lesion does not point to a general luetic infection at all; it simply means that there is or has been at some time in the past a local source of irritation in the territory of these glands. Permanent swelling of the epitrochlears on one side is often the result of an infection of long ago, such as a felon.

H. *The Wassermann Test.* This is, of course, a test for the presence of constitutional syphilis, and is of less value in the very earliest stages of the infection. It is premature to decide at what time in the infection a positive or a negative result is of actual value; but, since it is a general blood test, it is not reasonable to suppose that it can be useful until the infection has passed the barrier of the nearest lymphatic gland plexus, and has reached the general circulation. In other words, the test or its various modifications does not appear to be really available until the time of the secondary symptoms; and I should rate its value at about the same as one of these latter, always remembering that positive far outweighs negative evidence. Thus, a characteristic roseola, angina or adenopathy would be decisive, in spite of a negative Wassermann; as would be a positive Wassermann in the absence of these other corroborative symptoms. It goes without saying, of course, that the test can be made only by an expert; it is entirely too complicated, as at present elaborated, to be made by the practitioner.

I. The Fever. It is not generally appreciated that the onset of the systemic syphilitic infection is accompanied by a febrile reaction; this occurs in all cases, so far as my observation goes, though in many instances it is moderate and not prolonged. It usually lasts at least a week, with an evening rise and a morning remission and gradual ascent and decline much like that of typhoid. I have seen it, especially just precedent to and together with a general pustular exanthem, reach 105° F.; I have known such cases, during the prevalence of variola in town, to be repeatedly diagnosed as small-pox. In other cases it looks like an influenzal, typhoid, or other infection.

J. The Cephalalgia. This is an ache of a peculiar type, so that even patients who are subject to headache recognize the difference. It is a dull general pain or more acute localized pain, either persistent all the time with nocturnal exacerbations; or coming on at a definite time every evening. It may last for weeks.

K. The Osteocopic Pains. These do not differ from the pains in the bones and joints that occur in other febrile infections save that it is very usual for them to be most marked at night.

L. The Angina. A long-continued and obstinate "sore throat," which does not give the patient much trouble, but which he recognizes as being different from an ordinary cold, is often one of the earliest of the secondary signs. In some cases the objective symptoms are those of an ordinary angina; but in most instances there is an appearance that is characteristic, and on which I lay especial stress. The dusky redness of the velum and uvula is limited in front by an absolutely sharp line of demarcation, and does not fade gradually into the non-inflamed tissue anterior to it.

M. The Eruption. It would lead me too far in the present connection to detail the various forms of primary exanthem. Suffice it to say that by far the commonest is the roseola, the faint pink maculation most readily visible on the sides of the chest under the arm-pits.

Such then being the characteristics of the syphilitic initial lesion and the general phenomena accompanying it, it is evident that the presence of a more or less characteristic sclerosis, together with one or more corroborative signs, readily enables us to make the diagnosis of syphilis. The case is far different, however, when our opinion is asked, as it usually is, in the earlier stage when the local lesion alone

is present; and this is the more the case inasmuch as there are a number of conditions in which local lesions on the genitals and elsewhere closely simulate the chancre. These conditions are:

a. Simple Abrasions. Strange as it may seem, a simple excoriation is sometimes differentiated only with difficulty from a syphilitic initial lesion; and this is more especially the case if the lesion has been "cauterized," as many patients expect to be done and some physicians invariably do. The promiscuous use of silver nitrate more especially is responsible for many errors, and is liable to cloud the diagnosis. The unirritated excoriation is almost always perfectly characteristic. It is evident immediately after intercourse; it is a superficial solution of continuity in the beginning, and never a tumor with subsequent erosion or ulceration; and its shape is naturally irregular, and not rounded like the sclerosis. Repeated irritation, and especially the comparatively mild and non-cauterizing irritation of the silver stick, entirely changes the character of the erosion, and gradually causes the formation under and around it of an inflammatory mass that simulates the specific induration. The skilled touch can differentiate the two swellings; for that of the chancre is cartilaginous, insensitive, and sharply limited, whilst that from irritation is softer and more doughy, sensitive, and fades off into the surrounding normal tissues; but the conditions are very much alike to those unused to the distinction. The indiscriminate cauterization of suspicious sores is improper and to be avoided. In a lesion the physical appearance of which is not distinctive enough to permit the differential diagnosis to be made, the examination of serum from it for the spirochæte is the only means to settle it before the advent of the local adenopathy. And it must never be forgotten that a simple abrasion may be the site at which the luetic virus has entered the system, and that the characteristic features of the chancre may appear later.

b. Chancroid. Here also the diagnosis of the immediate condition should be easy, though both viruses may be implanted at one and the same time, and the chancre may appear later. The chancroid is an acute inflammatory affection; it begins a few hours or a day or two after infection; it is auto-inoculable; it is from the beginning a small, circular and very sensitive ulceration, with an inflammatory areola around it, a red or yellow irregular base and

undermined edges. It is more often multiple than the chancre; but experience has taught us that the multiplicity of the soft sore and the singleness of the hard one, points that the older syphilographers laid much stress on, is not a reliable differential feature. (Fig. 7.) I have seen a dozen typical chancres in a single case, and isolated chancroids are not infrequent. The adenopathy, also, of the chancroid is characteristic; there is a single, soft, tender inflammatory and swollen gland, or a chain of them, which is very prone to suppurate and form the ordinary chancroidal bubo. Finally the characteristic strepto-bacillus of Ducrey, appearing as chain-like bacilli in serried rows, and not the spirochæte, is found under the microscope.

c. Scabies. It may seem strange that this differentiation should present any difficulties; and it could hardly do so if a careful examination of the entire integument is made. The lesions on and around the genitals in scabies are purely infective, caused by the finger nails in scratching; we have erosions, papules, pustules, and crusts covering superficial excoriations, but nothing even remotely resembling the chancrous tumor. Besides this we will invariably find lesions similar to those on the genitals in the axillæ, on the anterior surfaces of the elbows and wrists, at the finger clefts, and under the breasts. I have never seen a scabies in which there were genital lesions alone; and should one be encountered, the differentiation, especially with the aid of the microscope, ought not to be difficult.

d. Herpes. This is one of the main stays of the advertising blood disease curer, and a frequent source of error, even for the careful practitioner. The herpetic lesions begin as single or grouped minute vesicles, that burn or itch; as they get larger they break and lead to the appearance of polycyclic superficial erosion, non-indurated, and unaccompanied by the characteristic adenopathy. They recur frequently, healing spontaneously in a few days; and the only time that they appear to show any of the characteristic signs of the initial lesion is when the injudicious use of caustics has caused inflammatory induration of their base.

e. Epithelioma. This begins, like the chancre, as a small tumor that may or may not subsequently exulcerate; and there is a circumscribed hardness to the lesion that may be very like that of the

chancre. But the courses of the two affections are entirely dissimilar. Epithelioma occurs in old individuals; it grows very slowly indeed, taking months where the chancre takes days; the ulceration is irregular and necrotic, discharging offensive pus and blood; the lesion is extremely sensitive; and while the neighboring glands enlarge early, the swellings are soft and doughy.

f. Gumma. This is occasionally an important differential diagnosis to make, and a difficult one. In the late stages of syphilis, gummatous infiltration sometimes occurs on the genitals, and is prone to appear in the scar that may mark the site of the original initial lesion. This is the so-called "chancre redux"; and in the light of our present knowledge of the bacteriology of the disease, it may sometimes be a question as to whether a suspicious lesion in a person who has had syphilis is merely gummatous or actually marks the site of a possibly attenuated second infection. Outside of theoretical considerations, there are facts that tend to show that there finally comes a time when the protective agents in an infected organism are no longer produced in sufficient amount or of sufficient vigor to prevent a fresh implantation of the virus. The differential points, however, should be sufficient. The gumma is neither so cartilaginous to the touch, nor so sharply circumscribed as the sclerosis; it breaks down in the center, with the production of soft gummatous material and not pus; the resultant ulceration is deep and ragged; the spirochæte examination may be positive, but not so surely so as in the initial lesion; and the Wassermann test will be positive, while it will be absent in the chancre.

It will be noticed that throughout this paper I have said nothing about the therapeutic test in doubtful cases. This has been done purposely. None of the other criteria interfere with one another; the touchstone of treatment, as it is called, may prevent the appearance of the secondary symptoms; and it is not in itself valuable enough to enable us to dispense with them. The chancre will retrogress without specific treatment, and other lesions may heal with it. Local mercurial treatment is especially to be avoided until the diagnosis is positively made. Not only may it entirely alter the appearance and feel of the local lesion, but it may and usually does prevent the finding of the spirochæte.

THE LABORATORY DIAGNOSIS OF SYPHILIS WITH DEMONSTRATION OF THE NOGUCHI MODIFICATION OF THE WASSERMANN REACTION

By FRANCIS A. HULST

Pathologist, Brooklyn Hospital and St. Catherine's Hospital; Assistant Pathologist, Methodist Episcopal Hospital

AND

THURSTON H. DEXTER

Pathologist, Methodist Episcopal, Williamsburg, Bushwick and Lutheran Hospitals; Associate Physician, Brooklyn Hospital; Physician, Brooklyn Home for Consumptives

Brooklyn—New York

The early history of syphilis is rather vague. Syphilis appears to have been one of the most ancient of diseases, which had begun to run its course in the human system through successive generations, to be revived by a new virus in the latter part of the 15th century, which has been attributed to the return of Columbus' sailors. The disease as we know it dates from 1494, and was prevalent in the French army at the siege of Naples.

The question is raised if we, as a race, will not in time live down this disease as the former one is supposed to have been; and in the affirmative it is argued that it is less virulent than it was a generation ago. On the other hand, this can be attributed to a better knowledge of the disease and its treatment.

All this, however, is speculative and, likewise, irrelevant to the subject of this article, but may serve as an introduction. At present we must all recognize syphilis as a prevalent affection, to which medical men must bend every effort toward cure, prevention and extermination. The only point this paper has to consider is the aid that the laboratory may give to the diagnosis of these cases. The question of diagnosis presents itself in two forms. Has the patient syphilis? Is the lesion syphilitic? That is, we are to distinguish between the two. If we can establish the fact that the patient has syphilis, we cannot from this assign any and all symptoms he may present to this disease. The syphilitic is subject to other infections

and afflictions as well as the non-syphilitic. It is as necessary to determine the character of a given lesion or symptom as to make the original diagnosis.

When a patient comes in and gives a history of illicit intercourse and shows an indurated sore on the penis there is little doubt of the character of his trouble. If there is a "soft sore" we may be in doubt until secondary symptoms appear and then the diagnosis is easy. Again, if the primary and secondary lesions are both so slight as to be overlooked by the patient as sometimes happens, especially in women, or the patient fails to give a clear history, either through lack of intelligence or a desire to conceal facts, the diagnosis is not so easy. Furthermore, the diagnosis in these cases is a serious matter and should not be announced as long as there is a reasonable doubt in the physician's mind.

In these doubtful cases laboratory methods have recently given us considerable help. The first was the discovery of the specific etiological organism. Ever since the advent of bacteriology many attempts have been made to isolate a bacterium of syphilis. Many claims were made but all were shortlived until the recent investigations in the field of animal parasites. In May, 1905, Schaudinn and Hoffmann, while trying to corroborate the presence of cytorrhyctes in syphilitic lesions, a question upon which the profession was divided at that time, found a hitherto undescribed organism to which they gave the name of spirochæta pallida. The announcement of the discovery was quickly followed by corroborative evidence from many observers and the spirochæta (treponema pallidum) was soon generally accepted as the causative factor of syphilis.

The finding of this organism must, then, be diagnostic. It is looked for in any active primary or secondary sore; has been found in the blood and organs of acquired and hereditary syphilis. The technic is to remove the slough from an open sore, stop bleeding with gentle pressure, and make a smear from the serum which then exudes. This eliminates the majority of saprophytic organisms which are present in the superficial layers of the sore. For exhibition of the organisms many devices have been made use of. The organisms are not easily recognized in specimens of fresh blood, but the newly introduced dark-field illuminator greatly facilitates their detection. The staining methods mostly used are Giemsa's and Goldhorn's and

the impregnation with silver. The finding of the spirochæta in a given lesion answers one of the questions as to diagnosis. It places the stamp of syphilis on that particular lesion.

The serum diagnosis of syphilis is of more recent origin. In fact, it is still in its infancy. Wassermann is the originator of a reaction based upon the phenomenon of hemolysis which has since received several modifications, notably the modification of Noguchi, which makes the reaction at once more accurate and for reason of its simplicity brings it within the means of the clinical laboratory.

The theory of the Wassermann reaction is as follows: The bloom serum of one animal has the power to cause hemolysis of the red blood cells of another animal. This power is increased by repeatedly injecting the red blood corpuscles of the one into the peritoneal cavity of the other. Thus, if the red blood corpuscles of the sheep are repeatedly injected into the peritoneal cavity of a rabbit, in increasing doses, there has arisen in the blood serum of this rabbit an increased power to dissolve the red blood corpuscles of the sheep, and this increased power is attributed to an increase of certain antibodies in the blood serum known as amboceptors. If this rabbit's serum is collected in a test tube and sheep's corpuscles added, hemolysis will not take place until a third body is added which is known as complement. This complement is present in every normal serum, and it is more potent in some animals than in others. If to the rabbit's serum and sheep's corpuscles is added fresh guinea pig serum, hemolysis will take place.[1] A similar phenomenon to the above is seen in the bacteriolytic power of the blood serum. The body that has been subjected to infection by a pathogenic organism has produced in its blood an increased bacteriolytic power to this particular organism, and this increased power is also attributed to an increase of certain antibodies known as amboceptors. If the blood of a patient having been infected with typhoid fever be drawn and the serum collected in a test tube and typhoid bacilli added, a dissolution of the bacilli will take place, provided complement (normal guinea-pig serum) is present. The complement is the same as used in the phenomenon of hemolysis. The amboceptors are, of course, different according to the body upon which they act, and are named

[1]If the rabbit's serum is fresh, guinea-pig serum is not necessary, as there is complement present in the rabbit's serum.

accordingly "antisheep hemolytic amboceptor" and "antityphoid bacteriolytic amboceptor."

The dissolution of bacteria is unaccompanied by any obvious change; that of hemolysis by a perceptible change. The latter can, therefore, be used as an indicator of the former in the following manner: In a test tube place the substance necessary for bacteriolysis, viz., bacteria, antibacterial amboceptor and complement. Have these of known quantities; incubate. Then add sheep's corpuscles and antisheep hemolytic amboceptor and again incubate. The result will be no hemolysis though all bodies necessary for it are present. The explanation is this: The complement can complete both hemolysis and bacteriolysis, but if only enough is present to satisfy one equation, so to speak, the other equation must remain unsatisfied. Bacteriolysis having been completed in the first incubation, no complement is left to complete hemolysis in the second incubation. If, for any reason, bacteriolysis has not taken place in the first incubation, hemolysis will take place by virtue of the unused complement. This is known as the complement fixation and may be illustrated as follows:
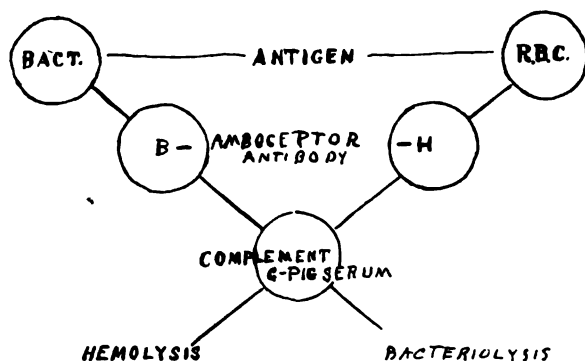
In the foregoing, the red blood corpuscles of the sheep and the typhoid bacilli may be termed antigen. An antigen is a body which, injected into an animal, will produce in the blood serum of that animal antibodies such as the amboceptors previously described. In applying these phenomena to the diagnosis of syphilis we depart from the phenomena of bacteriolysis. The union of any antibody

with its antigen has an affinity for complement. Extracts of organs of syphilitic subjects have been found to act as antigen in this reaction. Other bodies having no relation to the disease have also been found to act quite satisfactory, e.g., crude lecithin. The syphilitic antibodies of the blood unite with the lipoids and salts of these extracts with the same affinity for complement as the union between bacteria and the corresponding amboceptor. As human blood serum contains complement, it is necessary to destroy this by heating before using the blood for the test. The application of the Wassermann reaction may be illustrated by the following chart.

WASSERMANN REACTION

Patient's Serum Complement Saline Sol.	} + Serum Same	− Serum Same	No Serum Same
Corpuscles (Sheep) Amboceptor	} Same	Same	Same
Patient's Serum Complement Saline Sol. Antigen	} + Serum Same	− Serum Same	No Serum Same
Corpuscles Amboceptor	} Same	Same	Same

All bodies above dotted lines placed in tubes before incubation. Those below added after one-half hour's incubation and before second incubation.

Noguchi's modification makes use of the human red blood corpuscles in place of the sheep's, which eliminates one animal from our menagerie. Of more importance than this simplification is the elimination of a source of error in that the human serum (the patient's to be tested) contains a variable amount of natural anti-sheep amboceptor which impairs the accuracy of the original Wassermann test. Noguchi has, furthermore, made an exhaustive study of the quantitative relations of the substances, which latter seem to have been overlooked by other writers on the subject. The importance of this is obvious in some points; in others, it is not so clear at first.

It is apparent that, if sufficient amount of complement be added, both systems may be completed and hemolysis take place even though there has been a fixation of a part of the complement.   On the other hand, if too much amboceptor is added the same results may be obtained, because the greater the amount of amboceptor, the more active becomes the complement.   In the presence of one unit of amboceptor 0.1 cc. of complement is usually required to produce complete hemolysis; four units require one-third as much, and twenty units require only one-tenth as much complement.

Another important step toward simplicity made by Noguchi is the preparation of stable dried specimens of some of the bodies necessary to the reaction.   The antigen, amboceptor and, if necessary, the complement, may all be dried on filter paper.   These preparations may be standardized and kept almost indefinitely.   All one requires in making the test with these, is the patient's serum and serum for controls, and a suspension of human red blood cells, which may be had from the finger of the one making the test, or the nearest orderly.   Corpuscles of the patient may be used if the specimen has been recently taken.   This test is delicate to a small amount of serum. In making the original Wassermann, it is necessary to enter the vein and draw off several cubic centimeters of blood.   In Noguchi's modification, a few drops of blood are sufficient.   It is our custom to draw the blood from a puncture of the finger into a small ampule and immediately seal the ends.   The blood clots in this and the serum are easily drawn by a capillary pipette.   Two such drops from a capillary pipette are all that are required.

Noguchi applies his test as follows: Six test tubes 1 x 10 c.c. are arranged in pairs.   In each of the first pair is placed in a like manner one drop of the serum known to give a positive reaction; in the third pair is placed one drop of a serum known to give a negative reaction.   These last two pairs are positive and negative control tubes respectively.   In the last the object is to have no antibodies present, to see that the hemolytic system is in perfect order and so no serum need be added at all.   In all tubes there is then placed the complement, .04 fresh guinea pig serum, and 1 c.c. of a 1% suspension of human red blood cells.   To one of each pair only antigen is now added.   The rack of tubes is placed in an incubator for one-half hour at 37.5 deg. C.   It is during this time that the complement is

fixed if there are present any antibodies to unite with the antigen in the tubes in which this latter body has been placed. To all tubes is then added the hemolytic amboceptor and the rack again placed in the incubator until the reaction is complete. Experience in reading the control must determine the length of time required. All tubes must be shaken well before incubating, and frequent shaking during this period facilitates the reaction. The reading is made as follows: First examine the control of normal serum; if hemolysis is complete in both tubes the second pair with positive serum may be examined. In this hemolysis should be complete in the one in which there is no antigen, and no hemolysis in the one in which it is present. If such is found to be the case the tubes representing the test are examined. If they correspond with the first, i.e., hemolysis in both tubes, the result is negative. If they correspond to the second, i.e., hemolysis in one and not in the other, the case is positive. If they do not correspond to either, but the tube which contains antigen shows a partial but not complete hemolysis, it is the so-called weak-positive reaction. This is not diagnostic in an otherwise negative case, but suggests a further test. On the other hand, if the case is one which has not been doubtful but has been under treatment, it shows plainly that the treatment has not been carried far enough.

The material used in this method is prepared as follows:

Antigen.—Liver is ground fine and mixed with four to five times its volume of alcohol and allowed to stand several days in an incubator with occasional agitation. It is then filtered, the filtrate evaporated without heat to a sticky mass and this dissolved in ether. This is then again filtered and the filtrate partially evaporated and mixed with five times its volume of acetone. The precipitate resulting is the antigen and is collected by carefully pouring off the supernatant liquid after standing: 0.1 gm. of this is dissolved in 5 c.c. of ether and then mixed with 100 c.c. of normal salt solution. A series of tubes containing luetic serum, complement, and suspension of red blood cells is prepared as for a test and to them is added increasing amounts of the antigen from .01 to .3 c.c. Amboceptor is added and the series incubated. A control tube containing no antigen should be used and when hemolysis is complete in this a reading of the others should be made. The tube in which there is no hemolysis with the least amount of antigen is noted and this amount of antigen marked "x." Other

tubes without luetic serum are prepared and the antigen tested in larger quantities. 5x without the presence of luetic serum should not cause hemolysis. 2x is used as a standard quantity in tests. To impregnate filter paper 5 mm. square is to represent 2x. The weight of 2x being determined, the rest depends upon the amount of paper to be used.

Amboceptor.—Human blood is drawn in a quantity of salt solution and centrifugated. The red cells are washed three times and injected into the peritoneal cavity of a rabbit. The first dose is not over 10 c.c. Successive injections at intervals of four days should be increased about 5 c.c. each time for five injections. Ten days after the last injection the serum is collected. The strength of the amboceptor is determined by adding increasing quantities to a suspension of red blood cells with complement and incubating. The smallest amount necessary to cause complete hemolysis in 1 c.c. of a 1% suspension of red blood cells is taken as a standard and filter paper impregnated as in the case of antigen.

Complement.—A normal guinea pig is bled from the jugular vein into a Petri dish which is covered and allowed to stand at room temperature until the serum has collected outside the clot. For convenience this is diluted with normal saline to a 40% solution and 0.1 c.c. used for each tube. The difficulty in drying this so that it retains its properties is great; the comparative ease with which guinea pigs may be had, makes it advisable to use the fresh serum each time a test is to be made.

Suspension of red blood cells.—In a small flask of normal saline solution a few drops of blood are allowed to drop. This is shaken well and allowed to stand until all the cells have settled on the bottom of the flask, when the saline is withdrawn by a pipette and sufficient more saline added to make a 1% solution. With a little practice the color will indicate the required strength. Having found it difficult to always get a positive case for control at the time we desired to make a test, we have found it of advantage to impregnate filter paper with positive luetic serum in the same manner in which amboceptor is prepared and use it for positive controls.

The value of this test to the clinician in doubtful cases of syphilis is obvious. Its accuracy has been established, and it can be relied upon as a specific test for syphilis to the same or greater degree

as the Widal reaction is specific for typhoid. The reaction is found positive in about 90% of cases of active lues. It is not often present in latent lues. The reaction is not always strong in the primary stage and may be absent if taken very early. It is strong in nearly all active lesions of the secondary and tertiary stages. Those reporting results from a large number of examinations show a fairly uniform

NOGUCHI'S MODIFICATION

| Patient's Serum
Complement
R. B. C.—Human * | + Serum
Same | — Serum
Same |
| Patient's Serum
Complement
R. B. C.—Human
Antigen | + Serum
Same | — Serum
Same |

Incubate ½ hr. 37.5 C.

Add amboceptor to all tubes.

Incubate.

* 1% Solution in saline sol.

percentage of positive cases. Noguchi, in reporting over 1,000 cases of known syphilis, gives 92.8% in tertiary and 100% in hereditary syphilis. Affections other than syphilis in which the reaction proved positive are cases of leprosy (high percentage), carcinoma, endothelioma and Banti's disease.

Our own results correspond well with those of other observers. Of the 113 cases examined in the past six months, 53 were known to be syphilitic, 14 non-syphilitic, and 46 doubtful.

	Positive	Negative	Total
Known specific.......	45	8	53
Known non-specific...................	2	12	14
Doubtful..........................	17	29	46

All of the 8 cases clinically positive but giving a negative reaction were under vigorous treatment; ten of those giving positive reactions were read as weak-positive and all of these were under

treatment. Of the two cases that were not clinically syphilitic one was a weak positive reaction and a subsequent test proved to be negative. The other case was one of suppurative inguinal glands of gonorrheal origin. The doubtful cases were those taken from clinic and private practice which gave no positive history, but showed one or more signs possibly pointing to a syphilitic origin.

It seems to be the opinion of some that in the serum reaction for syphilis we have a means of determining when sufficient treatment to pronounce a cure has been applied. This is not so. It is found that the reaction becomes negative soon after the disappearance of active symptoms and certainly this cannot be said to be a cure. Noguchi's butyric acid reaction seems to promise more in this direction. It would seem that a method of determining the end of treatment by something besides an arbitrary three years would be of more value to us than a specific reaction for diagnosis. It does not stand to reason that all cases of syphilis require the same amount of treatment. Different individuals react differently to treatment in other diseases, and it is reasonable to expect that they should in syphilis. The reaction we speak of is the one described by Noguchi in the Proceedings of the Society of Experimental Biology and Medicine, 1909, p. 51, and repeatedly mentioned in the ARCHIVES OF DIAGNOSIS. It is based upon the increased globulin content of the blood in syphilis; 0.5 c.c. of serum free from cellular elements is mixed with 4.5 c.c. of a half saturated solution of ammonium sulphate. Upon precipitation of the globulins the mixture is centrifugated and the supernatant fluid decanted. The deposit is redissolved in 5 c.c. of normal salt solution. One part of this fluid is mixed with an equal amount of butyric acid (10%). On standing, prompt and dense turbidity appears in the tubes containing the globulins of luetic sera while normal sera remain quite clear for several hours. Some non-syphilitic sera show this reaction, but can readily be differentiated clinically. This reaction is constant in active or latent syphilis. A negative reaction with this test indicates that the patient has either had no syphilis or that he has been cured from it.

SIMPLIFIED METHOD FOR OBTAINING AND PREPAR- ING SPECIMENS OF SPIROCHÆTA PALLIDA

By B. G. R. WILLIAMS

Paris, Illinois

We have in the past experienced some difficulty in obtaining specimens of spirochæta pallida and preparing them for study. This has become considerable when we have desired to apply our methods to a rapid office diagnosis. I feel that I have at last devised a technic which can be used successfully by the general practitioner for the diagnosis of lues by smear examination, simpler in its application than the simplest method employed for the detection of the Koch bacillus.

The method which I am about to describe depends upon two principles: First that there are many spirochætes upon the surface of every syphilelcus, and second that these show a preference for liquids, exhibiting a tendency to leave their host with the drawing off of certain liquids properly applied.

First I tease, therefore, the surface of a mucous patch or cutaneous ulcer with a tooth pick, or if I am dealing with a papule or chancre I scrape it gently with a sharp scalpel. The fluid, a warm physiologic salt solution, is quickly dropped on the surface and as quickly withdrawn for examination. I use for this purpose about four to seven droplets of the solution and employ a capillary pipette, which is easily made by drawing out a common medicine dropper
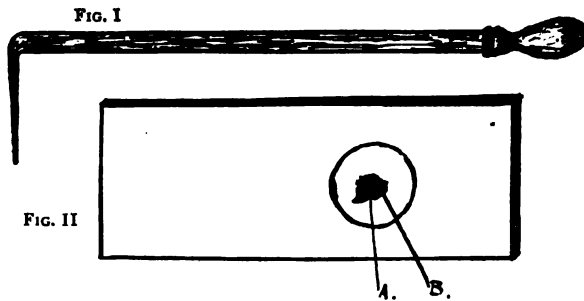
FIG. I. CAPILLARY PIPETTE FOR OBTAINING SPIROCHÆTES.

FIG. II. PREPARATION OF SPIROCHÆTES. A. CARBON ZONE. B. ZONE OF BROWN LIQUID AND UNSTAINED SPIROCHÆTES

tube in a flame. I find it best to use but little fluid, as most all the spirochætes obtainable will be caught up and the suspension more concentrated. I prefer to use a long tube with the capillary portion at right angles to the main 'cylinder. In removing the spirochætes from mucous patches of the throat, care should be taken not to break the tube in the mouth. The best of light is necessary and I usually employ immobilization of the head, gag and tongue depressor.

If the spirochætes are to be examined in motion, the salt solution should be warm when the suspension is made and examination done at once.

This technic carried out in detail gives me so much success that, at times, I have been able to find dozens of spirochætes in one field. I am usually able to make a diagnosis in 6 minutes after a patient with suspicious skin lesions appears in my office.

So far as the actual examination is concerned, I prefer not to worry with stains and consider dark field attachments unnecessary. I am employing in a modified form a method suggested by Burri (Wiener klinische Wochenschrift, July 1, 1909). Instead of using India ink as he proposes, I use Higgins' waterproof black drawing ink, which is really a suspension of carbon in a brown fluid that does not stain microorganisms. I mix a couple of droplets of the suspension of spirochætes with a droplet of the undiluted ink on a clean cover glass. As this mixture becomes settled, the carbon tends to collect near the center and drying begins at this point. The brownish fluid, however, collects at the periphery and with it remains most of the spirochætes in a suspension which concentrates rapidly. Strong transmitted light is used. The center of the preparation shows black and opaque. The periphery is brown and light is transmitted. All microorganisms are unstained, showing pearly white and appear magnified. Often many bacilli are seen, though where there are many spirochætes they are diminished or absent, a fact I am unable to explain.

By drying this preparation a fairly permanent specimen may be obtained which may be mounted in balsam for study. However, it must be noted that in the dried preparations the spirochætes rapidly lose their characteristic windings. That portion of the fluid last to dry contains the most spirochætes.

METALLIC TINKLING IN HYDROPNEUMOTHORAX

By JOSEPH H. BARACH

Pittsburg, Pa.

In studying the physical signs in hydropneumothorax, my attention was arrested at the explanation given by Sahli and Butler for the production of metallic tinkling. They believe the sound to be caused by dropping of fluid from the shaggy surface of a diseased pleura through the air space into the effusion at the bottom of the pleural sac. At first thought, it seemed reasonable to suppose that the sound could be produced in that way. But from the usual appearance of the interior of the chest as seen postmortem, it seemed much more likely that if any fluid which, as a result of posture or dipping or even splashing, had wet the surface of the chest cavity, such pleural fluid being cohesive, would be much more apt to gravitate and run down the inclining surface of the interior, than to drop from some projecting point into the basin of the chest and produce the tinkling sound. This seemed to be a point worthy of investigation, but before doing so, I consulted other authorities and found that the sound may be produced in more ways than the one mentioned. Altogether, there are four ways in which the sound is said to be produced. For brevity, I tabulate here the explanation of this sign and the names of the authors who offer it.

Drops of falling liquid	Air bubbles ascending through effusion from fistula below level of liquid	Bubbles of fine moist râles from tissues surrounding air cavity, and air chamber is resonator	Bubbling bronchial râles re-echoed
Laennec	Laennec Leube		
Sahli		Sahli	
	Riegel Guttmann		
		Rosenbach	
West	West		
Butler			
Anders	Anders	Anders	
Musser			Musser
James	James.	James	

Reproduction of the sound.—To reproduce conditions as they are in the diseased chest of hydropneumothorax, it is necessary first to have a chamber of such material that is not deadening to sound, and this chamber is to hold air and liquid. It must be so constructed that drops of liquid can fall into the liquid at the bottom of the vessel, and bubbles of air can be sent upward through the fluid. Experimentally, it is not necessary to have an open communication between the air chamber and the external atmosphere, although, as will be shown later, such a communication renders the sound more typical. These conditions were reproduced as shown in the accompanying illustrations. For comparative purpose I used a one liter and a four liter jar. In this apparatus the stethoscope is in direct communication with the air chamber. This need not be so, for the sounds can be heard by fitting a rubber cuff to the bell of the stethoscope and applying that to the wall of the glass jar. Glass does not lend itself to conductivity of sound nearly as well as does the thoracic wall.

Experiment No. 1. (*Figures I and A.*)—For reproduction of metallic tinkling by falling drops of liquid. Tube (*a*) is attached to a binaural stethoscope held in the ears. Steady dropping from pipette to bottom of the vessel did not produce metallic tinkling. There was, surprisingly, an almost complete absence of sound. On rapid expression of liquid from the pipette and quick successive falling of a number of drops, a splashing tinkle occurs with the impact, and one or two bubbles may form. The resulting sound is comprised of the impact and bursting bubble elements. It is an impure sound and is comparatively weak. The conditions necessary for production of this sound are, a small amount of liquid and a relatively large volume of air. The drops must fall from a comparatively great height to produce this sound.

Experiment No. 2. (*Figures II and B.*)—For reproduction of metallic tinkling by "bursting bubble." Syringe was used to expel air through rubber tube which lay submerged in the liquid at the bottom of the vessel. At each depression of the piston which expelled a bubble of air from the rubber tube, it was noticed that as the bubble was forced away from the mouth of the tube, a typical metallic tinkling sound occurred. When the bubble remained intact for a moment after it reached the surface of the liquid, a relatively

Fig. III
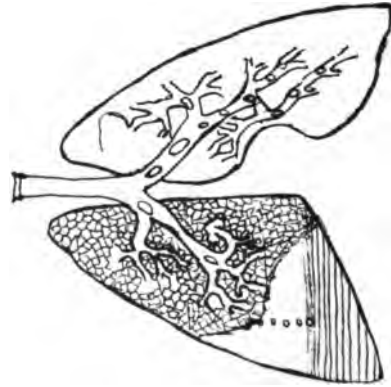
liquid and air

Reproduction of metallic tinkling by bursting of bubbles above level of liquid
FIG. C

Production of metallic tinkling by bubble above level of liquid

Fig. II

air

Reproduction of metallic tinkling by ascending bubbles of air through liquid at bottom of vessel
FIG. B

Production of metallic tinkling by ascending bubble through effusion

Fig. I

a

Reproduction of metallic tinkling by falling drops
FIG. A

Production of metallic tinkling by falling drops

METALLIC TINKLING IN HYDROPNEUMOTHORAX

Joseph H. Barach

weak bursting sound occurred coincident with its breaking. From this experiment may be noticed that the metallic tinkling sound is not produced by the bursting bubble, but that it occurs simultaneously with the expulsion of the bubble from that portion of the lung out of which the air comes. Varying the proportion of air and liquid in the chamber did not affect the result in this experiment. It was always a clear, metallic tinkling sound.

Experiment No. 3. (*Figures III and C.*)—To reproduce metallic tinkling as it is said to occur from the tissues that form the wall or roof of the resonating air chamber in hydropneumothorax. To the pipette was attached a rubber tube. The end of the tube within the chamber was covered by a sponge. Expression of air through the sponge when wet, will cause the expulsion of a bubble from its surface and will produce a metallic tinkling sound. The sound, however, is not as strong nor as clear as that in experiment No. 2, yet this is the way the sound must occur, if it ever does, from diseased lung above the level of the liquid. Undoubtedly many sounds do occur that are not of sufficient intensity to be heard through the chest wall.

Experiment No. 4.—To reproduce metallic tinkling as it is said to occur when bubbling bronchial râles are echoed in the resonating chamber. As in experiment No. 3, the sponge is moistened and then lifted above the level of the liquid. On replacing pipette by the syringe, then drawing the piston of the syringe upward, the barrel of the syringe becomes partially filled with liquid, and bubbles of air will follow. When the first bubble of air has come as far as the barrel of the syringe, the increase in size from the caliber of the rubber tube to that of the barrel will cause bursting of that bubble and then the metallic tinkle occurs. Judging from the experiment in the pathological lung this occurs as follows: During expiration, when air is rushing outward from the air chamber through a fistulous opening of the lung, it becomes mixed with liquid. A bubble thus formed is carried along until it reaches a larger bronchus and then it bursts. When this occurs, the sound is echoed in the resonating chamber and metallic tinkling is heard.

Factors influencing the character of the sound.—Of course, it is readily understood that by making gross changes in the proportion of air and liquid in the chamber of a certain size, that the tones

produced within that a chamber will vary to a certain degree. The size and the flaccidity or stiffness of the rubber tube, the expulsive force behind the bubble, have their determining influence on the pitch. The caliber and directness of the avenue of communication between the resonating chamber and the external atmosphere influence the tone of the metallic tinkling. A direct and relatively large communication gives richness to the tone. Closure of this communication takes away the musical element from the sound.

Relation of these sounds to respiratory movements.—Judging by the results of these experiments, it seems that when the metallic tinkling is heard with inspiration and with coughing, it is produced by bubbles of air being expelled from fistulous openings below or at the level of the liquid, or above the level of the liquid if there is sufficient moisture on the surface of the lung. When the sound is heard with expiration, it can be produced by bursting of bubbles at points of expansion within the bronchial tree, provided that the bronchial tree is in direct communication with the air chamber through a fistulous opening of sufficient size.

Conclusions.—In the light of the experiments performed, I wish to say that metallic tinkling in hydropneumothorax is produced most typically, and in all probabilities most frequently, by the escape of a bubble of air from the fistulous opening of a diseased lung below or at the level of the liquid.

When metallic tinkling is heard as the result of a bubble of air coming up through the effusion, the sound is not produced at the bursting of the bubble on the surface of the effusion, but with the separation of the bubble from the fistulous opening of the lung.

Metallic tinkling can be produced typically by bursting of a bubble within a bronchial tube, when that bronchial tube is connected directly with the air chamber by a fistulous opening of sufficient size.

Metallic tinkling can be produced by a bubble arising from the moist surface of a perforated lung above the level of the liquid, if the bubble is expelled with sufficient force.

The characteristic qualities of the tinkling sound are determined by the density and size of the ring forming the fistulous opening, the expulsive force behind the bubble, the proportion of air and liquid in the chamber, the size and directness of the avenue of communication between the resonating chamber and the external atmos-

phere.   Judging by the results of these experiments, the first three are the most potent factors in the production of typical metallic tinkling in hydropneumothorax.

Metallic tinkling as we hear it in the chest is probably never caused by falling drops, an explanation which to the present has received the widest endorsement.

A MODIFICATION OF THE METHOD OF MAKING WRIGHT'S BLOOD STAIN

By ROBERT KILDUFFE

Philadelphia

Possibly no method of staining blood smears has so well with-stood the test of time with an ever increasing popularity, as that in which use is made of the eosinate of methylene blue and methylene azur; and of its innumerable modifications, there is probably none more deservedly popular than that of Wright.

It is hardly necessary to mention the beautiful pictures that may be obtained with it: the clear differentiation of the leucocytes, the distinct demonstration of the malarial plasmodium, and the equally clear staining of any ·bacteria which may be present; these are too well known to need comment.   This latter quality—the staining of bacteria—renders it especially suitable for the cytological investiga-tion of exudates, pus, sputum, and opsonic smears; for the study of such specimens it is the stain par excellence.   Another attribute which particularly adds to its value as a routine reagent is the com-parative ease with which it may be prepared.   The method which I have followed is as follows.   It is quoted verbatim:[1]

"In 100 c.c. of distilled water thoroughly dissolve 0.5 gram of sodium bicarbonate.   In this solution dissolve 1 gram of methylene

---

[1] The article from which this method was taken has, unfortunately, been mislaid, so that the author's name cannot be given.   It is thought that it is one of Wright's own papers.

blue (Grübler's). This gives a 1% solution of methylene blue in 0.5% sodium bicarbonate. This solution is placed in a small flask and the mouth stopped with a cotton plug. It is placed in a steam sterilizer and heated for exactly one hour with full head of steam on (100° C.). The flask is then removed and allowed to cool.

In another flask, make a solution of 1 : 1000 of yellow eosin, soluble in water (Grübler's). When the methylene blue solution is cool, pour it into a wide, shallow porcelain tray; very slowly, with constant stirring, add the eosin solution. After a little time there will appear on the surface of the mixture a yellowish, fluorescent scum. This increases, and the mixture becomes muddy, purple, and full of an apparent precipitate. It is not easy to determine the exact time to stop adding the eosin solution, but, in the writer's experience, the correct amount is about 750 c.c.

The mixture is then filtered through a small filter. When filtration is complete a pasty, fluorescent mass is found adhering to the sides of the filter paper. This is the dye. When thoroughly dry, it is scraped from the filter paper and finely powdered.

To make the stain, add an excess of the dye to pure methylic alcohol (0.6 gram of the dye to 60 c.c. of alcohol is sufficient). The bottle is thoroughly shaken a number of times during the course of twenty-four hours, to insure complete saturation. For the following twenty-four hours the bottle must stand undisturbed to allow the undissolved particles of dye to settle to the bottom. The saturated solution is then decanted, or drawn up with a pipette, filtered, and 25% of absolute methylic alcohol added. This is the stain ready for application."[1]

One point in particular is to be noted in this and all other descriptions to which I have had access; namely, the proper amount of eosin to be added. This is generally stated to lie between 700 and 800 c.c.

Simon (Clinical Diagnosis, p. 135) gives 500 c.c. as the correct amount. It is certain that it varies with different preparations of methylene blue. Too little results in no precipitation, and, therefore,

---

[1] It is generally stated that any preparation of methylene blue (Grübler) may be used. It may be remarked, in passing, that in my hands, no success has followed the use of any but "Methylenblau Med. Pur. Grübler." With this dye, and the above technic, uniform success may be confidently expected.

no stain; while the addition of too much, in my experience, resulted in an impaired stain, a lessened quantity of which was obtained.

It occurred to me some time ago that the methods of quantitative analysis might profitably be applied to this problem, and the following technic was experimentally decided upon and has been used for almost two years with uniformly successful results.

After the methylene blue solution is thoroughly cool, 10 c.c. are removed with a pipette and placed in a porcelain evaporating dish about 5 inches in diameter. The eosin solution is placed in a burette, preferably of about 100 c.c. capacity, though smaller sizes may be used (necessitating refilling), and run in small amounts into the methylene blue solution which is, meanwhile, constantly stirred with a glass rod. By "flirting" the mixture up the sides of the dish, the appearance of the precipitate is easily detected as the solution runs down into the bottom of the dish. The quantity of eosin required to precipitate 10 c.c. of methylene blue is then read off and a simple calculation suffices to determine the exact amount necessary for the remaining 90 c.c. of methylene blue.

For example: For 10 c.c. of methylene blue, 75 c.c. of eosin were required. Nine times that quantity will therefore be required for the remaining 90 c.c. of methylene blue. 675 c.c. of eosin are therefore added slowly, with constant stirring, to the remaining amount of methylene blue in the flask, the 10 c.c. used for titration further added, and the stain is ready for filtration.

The advantages of the modification are:

The simplification of the technic of making Wright's stain.

The certainty with which the stain may be prepared in every instance, even in inexperienced hands.

The simplicity of the modification itself.

That none of the stain is lost—the amount used for titration being the stain itself and, as such, added to the other solutions so that the original volume remains unchanged.

One thing further may be mentioned: Wright's stain, especially in warm temperatures (summer, for instance), is subject to rapid deterioration. Various methods of overcoming this, such as the addition of glycerine, the use of other solvents in place of methyl alcohol, the neutralization of its acidity, etc., have been suggested, but, following a suggestion of Dr. E. Burville Holmes of Phila-

delphia, I have found that the stain will keep well and remain active indefinitely if kept in a dark, cool place.[1]

Some hesitation was experienced in submitting the modification detailed in the foregoing on account of its, very simplicity, but a fairly extensive search through the literature at my command has failed to reveal any method analogous to it.

Detailed and precise references to the literature consulted have been omitted in this brief note as unnecessary.

[1]In the Journal of the A. M. A., December 11, 1909, p. 2002, I reported that the use of a weak, watery solution of formalin would prevent the deterioration of the gentian violet stain used for Gram-staining. Experiments are now under way to determine if the same method will hold good for the preparation of Wright's stain and will be reported later.

General Retrospect

UNCINARIASIS: ITS SYMPTOMATOLOGY AND DIAGNOSIS

(A REVIEW OF RECENT LITERATURE)

By LOUIS BERTRAM SACHS

New York

LITERATURE

ASHFORD, B. K., KING, W. W., and GUTIERREZ, P.—Report on Anemia in Porto Rico, 1904.

STILES, C. W.—The Zoo-Parasitic Diseases of Man. (Osler's Modern Medicine, Vol. I., 1907.)

STILES, C. W.—Soil Pollution and Hookworm Disease in the South. Their Results and their Prevention. (Transactions, Medical Association of Alabama, 1908.)

SNYDER, J. R.—Uncinariasis in the Southern States. (Pediatrics, Dec., 1908.)

ALVAREZ, W. C.—Ankylostomiasis in New Mexico. (Jour. A.M.A. May 1, 1909.)

WHIPPLE, G. H.—Ankylostomiasis. (Bull. Johns Hopkins Hospital, May, 1909.)

CHAMBERLIN, W. P.—The Prevalence and Importance of Uncinariasis among apparently Healthy Southern-bred White Men in the United States Army. (Archives of Internal Med., Vol. IV., 1909.)

SILER, J. F.—Uncinariasis. (Post-Graduate, May, 1909.)

BASS, C. C.—Mild Uncinaria Infections. (Transactions, Am. Soc. of Tropical Med., 1909.)

The great extent to which the hookworm has infected the Southern part of the United States has made the diagnosis and prevention of uncinariasis a matter of national importance. Charles Wardell *Stiles* was the first man to recognize the great prevalence of hookworm disease in the United States. *Ashford, King* and *Gutierrez* in their "Report on anemia in Porto Rico" state that 90 per cent. of the natives suffered from the hookworm infection. *Stiles* has found that in Southern Florida 90 per cent. of the whole population harbor the parasites, while *Siler* found that 90 per cent. of all the soldiers recruited from the Southern Atlantic States were infected with this disease.

The disease is most prevalent among those who come in contact

with damp earth, as, farmers, miners, tunnel diggers, and among
those who go barefooted. It is now conceded that it is not so much
a question as to the kind of dirt these people come in contact with, as
it is a question of the fineness of the dirt. *Stiles* is of the opinion
that women and children are more frequently infected than male
adults. Negroes enjoy a relative immunity, and they show relatively
few symptoms even when they harbor a large number of the worms.
Poor soil drainage is the great etiological factor in this disease.

The cases may be divided into mild, medium and severe infec-
tions. It is needless to say that these three arbitrary classes of cases
merge imperceptibly into each other. A large proportion of the
entire population of a district may be infected with a mild uncin-
ariasis. Although *Whipple* is of the opinion that the severity of the
case depends on the number of worms present and on the extent of
the diffuse intestinal inflammation caused by these worms, *Bass*
holds that the symptoms of uncinariasis are not always in proportion
to the number of worms present. It is a common experience, how-
ever, that those who have mild infections generally do not have
recognizable symptoms. Of 152 cases reported by *Bass* in which
the symptoms were not marked enough to attract special attention,
32 per cent. gave a history of more or less indigestion and 34 per
cent. a history of pains and tenderness on pressure in the right side
of the abdomen. A complete blood examination was made in 62 per
cent. of these cases. The average percentage of hemoglobin was 90,
and the average number of red blood cells was 5,125,000. In only
26 per cent. of the cases was there more than 4 per cent. eosinophiles,
and in only 6 per cent. of the cases was there more than 6 per cent.
of eosinophiles. These mild cases can only be recognized by finding
the worms or their eggs in the feces. *Stiles* states that women and
children show a more severe infection than do male adults. The
possibility of the infection of children under 2 years of age is very
slight. In hot weather the symptoms of the disease are exaggerated.

The medium cases include those persons who show a definite
anemia, while other symptoms develop sufficiently to attract attention
to bring the patient under medical treatment.

Among the severe cases may be classified the typical dirt eaters,
who present a clinical picture which even the laity in the South
recognizes on sight.

If infection occurs before puberty it is likely to retard both
mental and physical development. A boy of 12 to 14 years of age
may appear to be but 8 to 10 years old. The skin may be white or
of a dirty-yellowish color. It becomes dry and parchment-like, and
in chronic cases it may become atrophied. The initial symptom of
the disease is a dermatitis, known as "the ground itch." *Ashford,
King* and *Gutierrez* found that 98 per cent. of native Porto Ricans

who had uncinariasis gave a history of this dermatitis. A few itchy papules may develop between the toes or on the side of the foot on those people who go barefooted. These papules may develop into a severe dermatitis. Papules may also develop on the buttocks. Wounds or ulcers are produced on the skin and all skin lesions tend to heal slowly. Edema of the face, feet, ankles, legs or scrotum may be present. The face usually has an anxious or stupid expression. The pupils have a tendency to dilate, and the visible mucous membranes vary from a natural to a white color. Cervical pulsation is very evident in severe cases. A more or less prominent abdomen, known among the laity as "pot belly," is a very common physical sign. The appetite may be light or ravenous, and later on in the disease complete anorexia may be present. There is furthermore a marked tendency to the development of an abnormal appetite for sour articles of diet, and a perverted appetite for tobacco ashes, mud, clay, charcoal and wood. Flatulence and heartburn are common symptoms; nausea and vomiting occur frequently. The presence of pain and tenderness in the epigastrium is reported by all observers. These phenomena may be brought into prominence by pressing on the right hypochondrium. They are the most constant, most suggestive, and most clearly marked of all the symptoms of the digestive tract. Constipation is common, but *Snyder* states that children more often have diarrhea. Blood may be present or absent from the feces. In severe cases a notable phenomenon is the great reduction in the force of the apex-beat which is replaced by a wavy, indefinite pulsation in the epigastrium. In moderately severe cases a hypertrophy of the left ventricle causes an enlargement of the heart area, and hemic murmurs are almost always present. Dyspnea is very common, especially in the later stages of the infection. Marked changes occur in the blood. Anemia is a very prominent symptom and has been taken as a basis for a number of vernacular names of the disease, as miner's anemia, brickmaker's anemia, etc. The hemoglobin percentage falls before the number of red blood cells is diminished. It may fall as low as 30 per cent. before there is any marked reduction in the number of red blood cells. In a series of 577 cases the average percentage of hemoglobin in the males was 41, while in women there was an average of 48 per cent. (Ashford, King and Gutierrez.) The number of red blood cells may fall as low as 700,000. There is not as a rule any leucocytosis. Eosinophilia is very characteristic of the disease. *Chamberlin* states that an eosinophilic count of over 5 per cent. is a very strong evidence of an intestinal parasite, but an eosinophilia of less than that percentage is no evidence against uncinariasis. In general, a good resistance to the hookworm is expressed by an eosinophilia. Very severe cases with poor resisting power and exhausted blood-making organs have little or no eosino-

philia. The effect of the hookworm on the mental state is very marked; stupidity, mental lassitude and dizziness are noted. The muscles are weak and flabby.

The diagnosis must of necessity rest on the discovery of the worm or its ova in the feces. *Stiles* in 1901 discovered that the hookworm, as it existed in America, was not identical with the old-world hookworm. Though it resembles the latter closely, it has sufficient anatomical differences to deserve for itself a distinctive name, and so he named it uncinaria americana. The most important difference is the absence of a ventral hook in the new-world species. Uncinaria americana is the common hookworm of the American continent and adjacent islands. It is a cylindrical worm, seven to eleven millimeters long, and possesses a dorsal and a ventral pair of lips at the mouth, a prominent dorso-median buccal tooth, and four buccal lancets. In the female the vulva is in the anterior half of the body. In the old-world hookworm, the vulva is placed in the female in the caudal half of the body. The worms inhabit the small intestine and are sometimes found in the stomach. They are true blood suckers. The eggs are thin-shelled, 64 to 72 microns long by 36 to 40 microns broad; they are oval with somewhat bluntly rounded poles. The contents of the shell are unsegmented or only slightly so in a fresh specimen. The eggs are ovaposited in the intestine of the host, and do not develop until after they escape with the feces. *Alvarez* states that text-books are at fault in picturing the hookworm ova with almost as heavy shades as are used for the trichocephalus. For those to whom the microscope is not available, *Stiles* suggests that about an ounce of fresh feces be placed on a piece of white absorbent paper; the feces are to remain on there for one hour, after which they are removed. In about four out of five cases of a medium or a severe infection, a reddish-brown color, reminding one of a blood stain, remains on the paper. If a case presents symptoms which might lead one to a suspicion of uncinariasis, it is wise to give the patient a course of thymol treatment, and then to search for the worms which are discernible to the naked eye. They are about one half inch long, about as thick as a pin, and have one end curved backward to form the hook.

When searching for the eggs it is many times necessary to examine a number of slides. *Alvarez* states that when using a 1/6 power lense with little light, the searcher must look for what seems at first to be a clear space in the surrounding opaque mass. It is in many cases impossible to find the ova without concentrating them.

Bass has worked out a very efficient method for the concentration of the eggs. The technic of this method is based upon the determination of the specific gravity and the shape of the eggs in

relation to that of the other material of the feces. The specific gravity of fresh uncinaria eggs is between 1050 and 1100. A quantity of the feces is well diluted with water, 1 : 10, and strained through gauze to get rid of the coarse particles. The filtrate is centrifuged and the fluid decanted; the centrifuge tube refilled and again subjected to centrifugation until all the diluted feces have been thus treated. The precipitate is rewashed several times with water as long as anything can be washed out. The centrifuging should be performed with high speed and just long enough to throw the eggs to the bottom. Centrifuging continued for too long a time defeats the purpose. With the centrifuge running 3500 revolutions per minute, ten seconds at first and later five seconds, is the proper time. (This process separates the remaining fecal particles almost entirely.) After this the precipitate should be rewashed, using calcium chloride solution of a specific gravity up to 1050. This disposes of everything having a specific gravity below 1050. The precipitate may now be examined microscopically. There frequently remains a considerable amount of material much of which is heavier than the eggs, and of such a character that it interferes with the recognition of the latter. This material may be removed by centrifuging with a solution sufficiently heavier than the eggs. A solution of a specific gravity of 1250 is sufficient. In such a solution the eggs go to the top and the foreign material to the bottom. With an appropriate pipette one may remove a few drops from the surface of the solution for purposes of microscopic examination. What is still better is to pour off some of the top fluid containing the eggs, dilute with water sufficiently to bring the specific gravity below 1050, and centrifuge again. The precipitate will now contain most of the eggs which were in the original portion of feces, and may all be placed on one slide and examined.

Progress of Diagnosis and Prognosis

GENERAL METHODS OF EXAMINATION—SYSTEMIC AFFECTIONS—DISORDERS OF GENERAL MET-ABOLISM—INFECTIOUS DISEASES

Tests for Urinary Albumin—F. ENGELS, Deutsche med. Wochenschr., Nov. 25, 1909.

A critical review of some of the commonly employed tests for the detection of albumin in the urine. Author recommends as one of the most reliable and convenient methods the boiling of the upper portion of the urine and addition of diluted acetic acid *after* the boiling process. The test with acetic acid-potassium ferrocyanide occupies second place as far as trustworthiness and convenience are concerned. On the other hand, all tests in which acids are added prior to boiling should be discarded.   MILL.

Boiling Test with Albuminous Urine—L. DE JAGER, Tijdschr. voor Genees-kunde, 1909, No. 2.

The boiling test of the urine does not always yield reliable re-sults even when acetic or nitric acid are added afterwards. The failure is due to the presence of calcium phosphate. Urine contain-ing the latter may yield a positive result, or it may remain clear on being heated although albumin may be contained in it. To prevent error, 1 c.c. of a solution of potassium oxalate (20%) should be added to the urine before this is boiled. After filtration the boiling is assumed; if the urine is not rendered turbid a few drops of acetic acid are added. If no precipitate occurs when the urine has been treated in this manner then there is positively no albumin contained in it.   WEBB.

Clinical Estimation of Ammonia in the Urine by the Formalin Method—E. W. BROWN, Jour. A. M. A., Dec. 18, 1909.

Author describes the technic of a modification of the formalin method for the estimation of urinary ammonia, as follows: About 60 c.c. of filtered urine are treated with 3 grams of basic lead acetate, well stirred, allowed to stand a few minutes and filtered. The filtrate is treated with 2 grams of neutral potassium oxalate, again well stirred and filtered. Ten c.c. of the clear filtrate are diluted to about 50 c.c. with distilled water and a few drops of 1 per cent. phenolphthalein added. The fluid will be slightly alkaline or acid; more frequently the latter. Fifteen grams of neutral potassium oxalate are added, thoroughly stirred, and the specimen exactly neutralized with one-tenth normal sodium hydroxid or sulphuric

acid.; 20 c.c. of the 20 per cent. commercial formalin, previously made neutral, are added and the solution again titrated with one-tenth decinormal sodium hydroxid. Every cubic centimeter of one-tenth normal sodium hydroxid corresponds to 0.0017 gram ammonia. The burette reading of the second titration multiplied by this factor represents the amount of ammonia in 10 c.c. of urine. The quantity is then calculated on the basis of the twenty-four hour volume. Author contends that the technic of this modification should recommend itself to practitioners for its simplicity; an estimation can readily be made in duplicate in ten minutes.   WESTERN.

Inosuria and its Relation to Glycosuria—G. MEILLÈRE and P. FLEURY, La Tribune médicale, 1909, No. 37.

Glycosuria is always accompanied by a small excretion of inosit, generally from about 0.25 to 2 grams in a liter of urine. Inosit was not only found in diabetes, but also in other affections in which grape sugar appeared in the urine. In the latter cases, transitory glycosurias in the course of acute infectious diseases like rheumatic fever, influenza, pneumonia, pyemia, purulent pleurisy, passing intoxications or remissions of arthritic diabetes, grape sugar appeared constantly in amounts larger than 0.25 gram per liter of urine. In phloridzin and experimental pancreas diabetes the occurrence of inosuria could also be demonstrated. In adrenalin diabetes there also exists a parallelism between the inosuria and glycosuria. In transitory clinical or experimental diabetes inosuria endures as a rule longer than glycosuria. The association of inosuria with indicanuria, urobilinuria and sodium chloride retention points to an insufficiency of the glands with an internal secretion, and consequently to an insufficiency of the normal protective agents of the organism.
                    ZIMMER.

Lymph Glands and Fat Metabolism—STHEEMAN, Tijdschr. voor Geneeskunde, 1909, No. 21.

According to conclusions reached by author, the lymph glands are organs preparing the internal metabolism of fat. They are organs of assimilation for ingested fat as well as the reserve fat of the body. Lipoids and cytotoxins occupy similar relations to the lymph glands.
                    WEBB.

Albumin Metabolism in Fever—K. LOENING, Klin. Jahrb., Vol. XVIII, No. 2.

At the height of temperature in typhoid fever from eight to ten grams of nitrogen are the daily average loss; nitrogen balance and even increase of body albumin may, however, ensue before decline of the fever. A few days after the onset of erysipelas increasing amounts of nitrogen are excreted; the nitrogen deficit ceases suddenly when defervescence occurs. The nitrogen deficit in pneumonia

is occasionally very low; after the crisis the epicritical nitrogen ex-
cretion is the rule after which the balance is soon reestablished.   In
scarlet fever, measles and articular rheumatism the nitrogen loss
may continue for from eight to ten days longer than the febrile
period, even then when reconvalescence ensues normally and nutrition
is plentiful.   There does not seem to occur abnormal nitrogen excre-
tion in diphtheria, tonsillitis and influenza, even when high fever pre-
vails for some days.   These observations demonstrate that loss of
body albumin is dependent upon the character and severity of the
disease and not upon the fever and nutrition, and that ingesta rich
in albumin may be partaken of in febrile diseases.   MILL.

Hemolysis in the Diagnosis of Malignant Neoplasms—O. P. JOHNSTONE
   and C. H. CANNING, Jour. A. M. A., Oct. 30, 1909.

The following conclusions are reached : The hemolysis reaction
appears to be of decided value in the diagnosis of malignant
neoplasms.   Negative results do not rule out malignancy, but speak
strongly against it.   The reversed hemolysis appears to offer valuable
information with regard to the extent and activity of the tuberculous
lesion.   Several examinations should be made in doubtful cases.   The
reaction does not seem to occur in other conditions that would lessen
its value in the diagnosis of malignancy.   WESTERN.

**Principles and Technic of the Wassermann and Noguchi Reactions and
   their Comparative Value to the Clinician**—D. M. KAPLAN, Am. Jour.
   Med. Sciences, Jan., 1910.

Every beginner for the first month or two will obtain unsatis-
factory results from lack of proper technic.   With proper technic
and well balanced reagents, it is possible to report correctly in 98
per cent. of cases.   It is advisable always to work with two methods :
the Wassermann and Noguchi, and having performed one test,
always perform another test for verification.   Questionable reactions
are not to be used for diagnosis.   The Wassermann reaction gives
negative results in about seven per cent. of positive sera, treatment
periods excluded, while the Noguchi method gives eight per cent. of
positive results in clinically well established non-syphilitic individuals.
Exceptionally strong reactions are obtained in untreated cases of
general paresis with both tests as well as in primary sores four weeks
after infection.   SACHS.

Serodiagnosis of Syphilis in Ophthalmology—G. SCHUMACHER, Deutsche
   med. Wochenschr., Nov. 4, 1909.

Serodiagnosis renders valuable assistance in a large number of
doubtful cases.   A positive reaction and, occasionally, a negative re-
action serve diagnostic purposes.   In cases of hereditary syphilis
which never showed any symptoms, or had not shown any for a long
time, the percentage of positive reactions seems to be especially low.

On the foundation of a hereditary syphilitic affection of the eye, tuberculosis of the internal eye may develop.   MILL.

Tuberculin Vaseline to produce Ocular Reaction—A. WOLFF-EISNER, Münchener med. Wochenschr., Nov. 2, 1909.

Recommendation of a ½% tuberculin-vaseline mixture to employ for the ocular test. The mixture keeps better and adheres better to the conjunctival sac than do watery solutions.   MILL.

Detection of Tubercle Bacilli according to the "Double Method" of Ellermann-Erlandsen—H. KÖGEL, Deutsche med. Wochenschr., Dec. 2, 1909.

An amount of sputum is rendered homogenous and subjected to sedimentation; the sediment is then dissolved and subjected to a second sedimentation. The mode of procedure is as follows: (1) One volume sputum (10-15 c.c.) is mixed with half its volume 0.6% $Na_2 CO_3$ solution in a corked graduate. The mixture remains for 24 hours in a thermostate at 37 deg. C. (2) The larger portion of the supernatent fluid is decanted and the sediment is centrifugated in a graduated centrifuge tube. The liquid is decanted. (3) Four volumes 0.25% NaOH are added to one volume of sediment. After careful stirring, the mixture is brought to a boil. (4) Centrifugating. This "double method" is far superior to all others for the detection of tubercle bacilli. An exact method of counting showed that the last obtained sediment contained twenty or thirty times more tubercle bacilli than the ordinary smear preparation. In sputa in which by the ordinary methods tubercle bacilli cannot be demonstrated this procedure will very likely prove their presence. MILL.

Determination of Tubercle Bacilli in the Blood of Persons suffering from Phthisis—A. M. HEWAT and H. C. SUTHERLAND, British Med. Jour., Oct. 16, 1909.

Authors have made examinations of the blood of 22 patients suffering with pulmonary tuberculosis; 13 examinations were performed according to Rosenberger's method and 9 according to Forsyth's method. Their results are almost completely opposed to the results obtained by Rosenberger and Forsyth. Of the 22 cases examined only one case showed any acid-fast bacilli in the blood, and on a second examination, the blood of this case proved to be negative. The results of these examinations have led them to the belief that at no stage of localized pulmonary tuberculosis can the tubercle bacilli be demonstrated in the blood.   SACHS.

Presence of Tubercle Bacilli in the Circulating Blood—M. P. RAVENEL and K. W. SMITH, Jour. A. M. A., Dec. 4, 1909.

Authors maintain that the method of Rosenberger is not a reliable one and does not furnish a means for the diagnosis of tuberculosis either in the early stages or later.   WESTERN.

Leukanemia—C. H. WELLAND, Quarterly Jour. of Medicine, Oct., 1909.

Parks Weber in 1904 first described a case of this disease, as follows: Progressive anemia and asthenia with maintainance of the subcutaneous fat; changes in the red corpuscles rather similar to, but not so extreme as those met with in true pernicious anemia; absence of true leukemic changes in the blood, but presence of slight myelocythemia and of an inverted proportion of leucocytes and polynuclears. To these features, author adds the presence of large numbers of nucleated red blood corpuscles. The disease in its clinical and hematological features most nearly resembles the acute forms of leukemia. The differentiation of cases of leukanemia from true leukemia is urged on account of the absence of increase in the eosinophiles and the basophiles, which are always increased in the latter affection. Author does not consider this fact of much importance. SACHS.

Indicanuria and its Significance—J. DALAND, Jour. A. M. A., Oct. 30, 1909.

Absence, diminution or excess of hydrochloric acid, by producing indigestion and fermentation, favor the production of indol. Indicanuria has been observed in diarrhea, in association with indigestion, gastritis, enteritis, colitis, ulceration or obstruction of the small or large intestines, cholera, dysentery, Addison's disease and inanition. Acute attacks of indigestion with furred tongue, offensive breath, constipation, mental and physical depression and headache, are usually associated with indicanuria. Excessive formation of indol has been observed in various morbid states of the liver, with or without jaundice, in diseases of the pancreas, as well as in suppurative and gangrenous conditions of other parts of the body, as, for example, in empyema, gangrene or abscess of the lung and perityphlitic abscess; and has also been observed after the administration of turpentine or creosote. Acute attacks of toxemia are frequently associated with dark-colored urine showing hyperacidity, high specific gravity, indicanuria and skatoluria, or moderate albuminuria and choluria, cylindroids and a few hyaline tube casts. Chronic interstitial and parenchymatous nephritis develop in course of time if the toxemia increases in frequency and intensity, or becomes chronic with exacerbations. The circulation in the blood of these toxic substances at irregular intervals over a period of many years may cause the development of arteriosclerosis from direct action on the walls of the vessels. The relationship of indicanuria to the nervous system is varied. WESTERN.

Significance of Indicanuria—HEINRICH STERN, Jour. A. M. A., Oct. 30, 1909, p. 1448. (Discussion.)

The pathologic significance of urinary indican, or rather indoxyl-sulphuric acid, has been grossly exaggerated. There ensues an in-

creased production of indoxyl compounds in cholera, Addison's disease, obstructive affections of the small intestines, etc., but this does not justify us in ascribing to them toxic qualities, and to maintain that they stand at the foundation of a number of pathologic conditions. The indoxyl compounds have no direct relationship to so-called pyorrhea alveolaris, they are neither its cause nor its result. The indoxyl compounds are normal urinary constituents and we find them in small amounts in every human urine, except in that of new-born and breast-fed infants. Indoxyl is even contained in the renal secretion of infants who obtain besides human milk also some cow's milk, and even in these instances it occurs in the absence of any digestive disturbances whatsoever. Increased amounts of indoxyl as found in urine allow of but one interpretation, namely, that we are confronted with some form of tryptic perversion. Some observers hold that the trypsin of the pancreatic secretion induces or favors the production of indoxyl. Their contention is based on two facts, viz.: the tryptic quality as regards decomposition of the ingested proteid material, and the decrease of urinary indoxyl in case of an occlusion of the pancreatic duct. Clinical experiments and observations conducted by author, however, have demonstrated that in the majority of instances of indicanuria, we have to deal with an insufficiency of tryptic function and, consequently, with abnormal putrefactive processes and the augmentation of the intestinal bacterial flora. While it is possible that indicanuria may occur with a process like pyorrhea alveolaris, while it is even possible, although it has never been proved, that perverse intestinal putrefaction may stand in some more or less remote relationship to pyorrhea alveolaris, we cannot maintain that one of the accidental products of such putrefaction, the indoxyl, is the true causative agent of this or any other affection. We must not forget that pyorrhea alveolaris is an exceedingly progressive, chronic affection, and that indicanuria, that is the excessive excretion of indoxyl compounds, is essentially an acute, or at least, a limited occurrence. Is it possible that the rather ephemeral indicanuria will give occasion to the enduring pyorrhea? The same contention holds good with all other affections which, at one time or another, have been accused of having excessive excretion of indoxyl as their causative factor. The indoxyl compounds are not toxic in themselves, so far as we know, they are of more or less accidental occurrence, and may point to an occlusion of the small intestine with a decrease of tryptic function and an increase of bacterial activity. Everything else belongs to the realm of speculation.   WESTERN.

Indicanuria in Young Children—E. M. SILL, Am. Med., Nov., 1909.

Little is said in the text-books in reference to indican in the urine of children. Author found indican in varying amounts in a

certain percentage of cases of diphtheria, measles, scarlet fever, pneumonia, bronchitis, tuberculosis, rheumatism, constipation, gastroenteritis, enteritis and gastritis. In almost all of these cases there existed a heavily coated tongue, foul breath, and bad stools, with either constipation or diarrhea as a rule, and while the majority had more or less fever at different times, this was not always the case. The more prominent the toxic symptoms, such as headache, fever, vomiting, etc., the greater the amount of indican found in the urine.

                                                      WESTERN.

Rare Case of Nicotine Exanthema—P. NÄCKE, Münchener med. Wochenschr., Dec. 14, 1909.

An insane patient, 23 years old, inmate of an asylum, exhibited marked symptoms of acute nicotine poisoning after the ingestion of from 7 to 10 grams ordinary chewing tobacco which he had macerated in coffee. He had nausea, vomiting, headache, vascular manifestations, and pupillary changes. Soon afterwards an exanthema extending over the entire body, scarlatiniform and somewhat raised, made its appearance; violent itching accompanied the rash, which disappeared after five days. Synchronously the other toxic phenomena vanished. Neither fever, nor albuminuria, nor intestinal disturbance was noted. Desquamation did not occur. The exanthema was a general erythema resembling scarlet in the beginning. At the height of the nicotin intoxication, the insane patient appeared to be much brighter, and his answers were more logical. After subsidence of the exanthema the mental confusion returned.   MILL.

Septicemia due to Paracolibacilli—C. KLIENEBERGER, Zentralblatt f. innere Medizin, 1909, No. 46.

A case terminating favorably the etiology of which was not quite clear. Proof that the microorganisms isolated from the blood at the height of the disease were the source of infection was furnished during the course of the affection when the blood serum exhibited agglutinating properties for these bacteria. In the beginning, the blood showed no specific agglutinating powers.   WESTERN.

Influenza Bacilli as Pus Producers—J. WEIL, Wiener klin. Wochenschr., Dec. 2, 1909.

Suppurations which are solely due to the bacillus of influenza ensue rarely. Author reports the case of a child in whom an influenza bacillus abscess developed in the hip joint a month after the invasion of the organism by the specific microorganism.   MILL.

Early Diagnosis of Measles—HECKER, Münchener med. Wochenschr., Oct. 12, 1909.

One to three days before the appearance of Koplik's spots there occurs as a rule a distinct diminution of the total leucocytes, a leu-

copenia, which increases with the appearance of the exanthema. There may also ensue diminution of lymphocytes, lymphopenia, not only in the florid stage, but also in the incubation period three to five days before the production of Koplik's spots. Premonitory lympho-penia and in the second instance leucopenia in the last days prior to the appearance of the exanthema, may be of service in the early recognition of measles.   MILL.

Epidemic of Varicella—B. Bosse, Archiv f. Kinderheilkunde, Vol. LI, Nos. 1-4.

In a maternity institution 36 out of 70 nurslings became affected with chicken-pox. Seven of these had septic sequelæ. Three died. An additional case of infection, terminating in death, but without varicella, had also ensued at the time of the epidemy. Two adult women patients became also infected with the disease.   MILL.

Difficulties in the Diagnosis of Scarlet Fever—J. F. Schamberg, Arch. of Pediatrics, Dec., 1909.

Scarlatinoid rashes may appear during the prodromal stage of small-pox, chicken-pox and measles, and may occur early in the course of malaria, typhoid fever and septicopyemia. They may occur in varicella patients. Scarlatinoid rashes may also occur late in the course of various infectious diseases. The rash under such circumstances is commonly the expression of a septic condition, often a streptococcic infection. Diphtheria antitoxin and other sera may produce scarlatiniform rashes so closely simulating the eruption of scarlet fever as to defy all efforts at satisfactory differentiation. In very mild cases of scarlet fever, in which the rash and general symp-toms leave doubt as to the nature of the disease, the tongue often fails to present its characteristic appearance. On the other hand, the tongue in well-pronounced cases shows a variable amount of promi-nence of the lingual papillæ. In rare instances the strawberry tongue may be seen in affections other than scarlet fever. Scaling is the terminal stage of certain pathologic changes in the skin which are by no means peculiar to scarlet fever. There are many rashes which are followed by desquamation, notably those included under the designation "scarlatinoid" or "scarlatiniform erythema." Desquama-tion may occur after typhoid fever, in malaria, pneumonia, rheu-matic fever and other conditions in which a sudaminous or sweat eruption may take place.   WESTERN.

Amebic Dysentery—S. K. Simon, Jour. A. M. A., Nov. 6, 1909.

The symptomatology of amebic dysentery is not always clearly defined and constant. During its course there are quiescent periods, when apparently all trace of the trouble has disappeared. The

bowels may even become obstinately constipated. The amebæ remain, however, constantly under cover during this time, the infection suddenly flaring out again under conditions favoring renewed activity. These occasional attacks of diarrhea, alternating with periods of normal evacuations or constipation, make up a very suggestive picture of an amebiasis, and when present should lead to an immediate examination of the stools for the amebæ. When attacks of diarrhea do occur, the number and character of the evacuations do not follow any set rule. A great deal depends on the location of the ulcers. If low down, and especially if in the rectum, the evacuations are usually frequent and a marked tenesmus, with soreness of the lower bowel, is noted. If the main lesions are above the sigmoid, as they most frequently are, the number of stools may never average above two to three per day. Mucus may or may not be present, but commonly is. Pure blood, or a blood-streaked mucus, author has found to be fairly constant, though at times in only small amounts. In one of author's cases, with liver abscess as a complication, the patient suffered severe hemorrhages, a symptom which seems always suggestive of abscess.   WESTERN.

**Remissions and Recovery in Tuberculous Meningitis—A. E. MARTIN,
    Brain, Aug., 1909.**

Author concludes that undoubtedly long remissions and even recoveries do occur in tuberculous meningitis. Recoveries are more frequent than is believed. Twenty undoubted cases have been recorded since 1894, while other cases of recovery have been published among which, though definite proof of the nature of the disease has not been afforded, some were probably true cases of tuberculous meningitis. The lesion in the meninges may at a later period form the focus of a fresh infection which usually terminates fatally, and consequently the prognosis in these cases must be guarded.   SACHS.

**Chronic Glanders in Man with Reference to an Unusual Type affecting
    the Upper Respiratory Tract—O. L. ADDISON and G. S. HETT, Lancet,
    Oct. 23, 1909.**

In the majority of cases the infection occurs through a wound or abrasion of the skin, but in a certain number, the infection occurs through the mucous membrane of the nose or mouth. The incubation period is usually four to seven days, although it may vary from a few hours to a year. A striking feature of chronic glanders are the long periods of freedom from any manifestations of the disease. The initial rash when present may be mistaken for that of small-pox. At the outset, the disease has sometimes been mistaken for typhoid fever, septicemia, pneumonia, and rheumatism. The later manifestations simulate nearly all those of syphilis and tuber-

culosis, from gummata to osteomyelitis and meningitis. A large number of those infected with chronic glanders die within four months. It has been estimated that sixty per cent. of the chronic patients recover. Since long periods of latency occur, it is most likely that a certain percentage of the reported cured cases have relapses.   SACHS.

RESPIRATORY AND CIRCULATORY ORGANS

Outlining of Normal Organs and Diagnosing of Diseased Conditions of Pleura and Lungs by Palpation—F. M. POTTENGER, Lancet-Clinic, Dec. 11, 1909.

Description of two physical signs (1) Muscle rigidity, which may be defined as a feeling of resistance noted on palpating the muscles which overlie inflammatory conditions affecting the pulmonary parenchyma or pleura due to acute muscle spasm when the inflammation is acute, and pathological change in the muscles when the inflammation is chronic. (2) A feeling of different degrees of resistance noted over organs or parts of organs of different density on "light touch palpation." The two signs are clearly distinct. Muscle rigidity is confined to the muscles alone, while the difference in resistance found on light touch palpation applies to the density of tissues as found not only in the muscles, but the deeper organs as well, and may be used in outlining either normal organs or areas of disease where such disease produces change in density of any of the tissues, which we are able to palpate.   WESTERN.

Physical Explanation of certain Auscultatory Signs heard in Connection with Morbid Conditions of the Lungs or Pleura—H. A. HAIG, The Practitioner, Dec., 1909.

Author states that each sign should be looked at from the point of view of its origin in a distinct pathological condition in the structures concerned and not merely empirically. Auscultatory signs should be considered not as entities per se, but in conjunction with the other physical signs and symptoms of the case in hand. The instrument used for the purpose of chest auscultation should be as simple as possible. If a binaural stethoscope be used, the rubber and metal tube connections should be short, to diminish irregular damping and dispersion of the sound vibrations. The main point to avoid in a stethoscope is unnecessary connections, and to convert the apparatus into a fairly rigid sound-conducting instrument.
                                                    SACHS.

Practical Value of Spinal Percussion in Diseases of the Mediastinum—J. C. DaCOSTA, Jr., Am. Jour. Med. Sciences, Dec., 1909.

Spinal percussion is of advantage in the study of obscure mediastinal lesions. In the class of cases presenting indefinite pressure

symptoms and mural signs, enlarged bronchial and mediastinal glands frequently produce vague and puzzling pressure symptoms and physical signs, and in these cases the presence of a dull vertebral strip below the fourth thoracic spine gives a most significant clue, and one ordinarily corroborated by subsequent X-ray examination. Mediastinal neoplasm, aneurysm of the aortic arch, tumor of the esophagus, atelectasis, consolidation of the lung, and pleural effusions may extend back and so produce unnatural dulness over the thoracic vertebræ.   SACHS.

Cutaneous Tuberculin Reaction in Pleuritis—BARBIERI, Riforma medica, 1909, No. 46.

In patients with acute serous pleuritis the cutaneous reaction with undiluted tuberculin was nearly always positive.   ZIMMER.

Acetonuria and Bronchial Asthma—H. SCHMIDT, Wiener med. Wochenschr., Oct. 23, 1909.

Author's observations concern children between the fourth and sixth years of life. All the little patients had neuroarthritic and skin affections. The asthmatic attack in the first two cases run a course as in the adult, but was accompanied by vomiting and marked acetonuria, which latter disappeared soon after cessation of the dyspnea. Inasmuch as in other youthful patients dyspnea was little pronounced and inanition had not ensued, the acetonemia may be an expression of a metabolic crisis; asthmatic attack, acetonuria, paroxysmal vomiting and the neuroarthritic and skin manifestations together form a typical clinical picture.   MILL.

Infection of Distant Organs in Ozena—A. CASTEX, Jour. des Praticiens, 1909, No. 31.

There are a number of diseases of apparent unknown origin which stand in relationship to ozena. While certain affections of the lateral sinuses and the middle ear are known to occur in connection with ozena, complications ensuing in the digestive and respiratory organs, the lymph glands, the eye and the nerve centers have as yet been little studied. Certain forms of dyspepsia are produced by the damage done to the gastric mucosa by swallowed crusts. In a case characterized by torpid digestion, anorexia, and diarrheas the symptoms disappeared after the healing of the ozena. Among the complications arising in the respiratory tract ozena of the trachea and pulmonary tuberculosis deserve mention. Tuberculosis develops in connection with ozena in 25 per cent. of the cases; again, in 50 per cent. of the cases of tuberculosis ozena exists in the family of the patient. Connected with ozena there are also enlargements of the cervical glands which disappear with the amelioration of the causative affection.   MILL.

Latent Pneumonia—GENTITI, Riforma medica, 1909, No. 43.

The diagnosis of lobar pneumonia was made in a patient who neither coughed nor exhibited any of the characteristic physical changes in the lungs. On the ninth day of the disease, shortly prior to the crisis, cough with bloody expectoration in which diplococci could be demonstrated, appeared.   ZIMMER.

Blood Pressure Determination—W. WINTERNITZ and W. WERTHEIMER, Wiener med. Wochenschr., Nov. 13, 1909.

On the hand of a case which was examined again after an interval of ten years authors conclude that determination of a very high blood pressure in one artery does not indicate that there exists a general increase of blood pressure, as we cannot separate during determination the resistance of the vascular tube (local arteriosclerosis) from the lateral pressure of the circulating fluid. MILL.

Diagnostic Value of the Auscultatory Blood Pressure Determination—J. TORNAI, Orvosi Hetilap, 1909, Nos. 40 and 41.

According to author the auscultatory method of blood pressure determination after Korotkow is the most simple, and, at the same time, the most exact. Quality and behavior of the sounds permit of important conclusions as regards the functional conditions in the heart. The narrow cuff appears to be better adapted for the auscultatory method than the one ordinarily employed.   ZIMMER.

Delay or Retardation of the Pulse as a Sign of Aneurysm—L. FINDLAY, The Practitioner, Dec., 1909.

There exists at the present time a great difference of opinion, both as to the existence of asynchronism of the radial pulse in cases of aneurysm, and as to its diagnostic importance. The author concludes that in cases of thoracic aneurysm, delay or increased retardation of one of the radial pulses does occur. This same delay may or may not be present in the case of the corresponding carotid pulse. If the idea, based on experimental physics, be correct, that delay of the pulse wave is only produced as the result of the wave passing through the aneurysm, then the phenomena of delay should be a most important diagnostic aid in the localization of the aneurysm. Digital examination is not a reliable test of the presence or absence of delay. The finger may miss the delay when present, and may miss it when absent. A more delicate instrument, such as the clinical polygraph, is necessary.   SACHS.

Intermittent Claudication—D. M. GREIG, The Practitioner, Nov., 1909.

Author reports a case of intermittent claudication due to venous, not arterial, affection. He concludes that, since arteriosclerosis is so common an affection, and the condition of intermittent claudica-

tion so rare, that it is inconceivable that arteriosclerosis alone can always be the cause of intermittent claudication. It may be due not only to interference with the blood flow to, but also to interference with the blood flow from the affected muscles. Intermittent claudication may be typically developed if the interference be only in the removal of the blood, namely, in the efferent veins.   SACHS.

Anatomical Study of Pericarditis—H. BROOKS and L. LIPPENCOTT, Am., Jour. Med. Sciences, Dec., 1909.

Pericarditis is a lesion secondary in nature, rarely or never primarily, and therefore must be considered as a complication to the primary condition. It is more noteworthy as an indication of the general condition in which it arises, than on account of its own importance, except in suppurative cases. It is therefore of little relative clinical importance, except as a diagnostic index. Though true myocarditis is not generally associated with pericarditis, myocardial degeneration is of frequent occurrence, and is not as a rule due to the pericarditis, but it is caused by the same condition as the pericardial inflammation. Overaction of the heart may induce pericarditis, and independent myocardial degeneration leading to dilatation of the heart, and especially fatty degeneration of the myocardium, is a predisposing or determining factor toward pericarditis. Sero-fibrinous pericarditis is generally an evidence of generalized bacteremia. Chronic adhesive pericarditis, a lesion of frequent occurrence, is difficult of diagnosis, and is of little relative clinical importance. Serious symptoms arise from adhesive pericarditis only when the myocardium itself is diseased. Signs attributed to pericardial synechia only develop when mediastinal inflammation or adhesions of marked degree are present in addition to the pericarditis.   SACHS.

Regular Occurrence of Interpolated Extrasystole—E. E. LASLETT, Heart, Vol. I, No. 2, 1909.

A ventricular extrasystole is usually followed by the so-called compensatory pause. Ventricular extrasystoles may be interpolated between normal rhythmic beats of sinus origin, and the compensatory force is then absent. Instances of such interpolation have been observed in man at the normal pulse rates, but usually the pulse rate is slow, and the interpolated extra beat occurs early in diastole. The author has at present under his care a patient suffering from mitral stenosis, in whom this form of extrasystole has been not only of frequent occurrence, but also appeared at regular short intervals during comparatively long periods. In this patient at times there occurs a series of interpolated extrasystoles after every third normal beat.   SACHS.

Referred Cardiac Pain—F. J. THOMSON, Bristol Medico-Chirurgical Jour., Sept., 1909.

In the majority of cardiac lesions, more particularly in chronic disease, the pain which results is a true reflex phenomenon. The conditions more commonly associated with cardiac pain are, (1) chronic myocardial degeneration, fibro or fibro-fatty; (2) atheroma of the coronary arteries, more often than not associated with the last condition; (3) disease of the aortic valves; (4) aortic aneurysm. The usual distribution of the pain of cardiac disease is over the precordia, particularly between the levels of the third and sixth ribs; along the inner side of the left arm and forearm; and in the left side of the neck. In severe and prolonged cases, the pain may spread to the right side. Ventricular disease causes referred pain from the second to the fifth dorsal areas, while the pain accompanying certain cases of distended auricle due to mitral stenosis is referred lower down to the fifth, sixth, seventh and eighth dorsal area. The failure of contractility of the heart muscle, affords, perhaps, the most reasonable explanation of cardiac pain. The agonizing attacks of spasmodic pain, constituting the classical form of angina pectoris, present such distinctive features that the diagnosis is usually self-evident. Such classical attacks do not constitute the majority of cases of referred pain in association with aortic or myocardial disease. In the larger number of cases, the pain is less severe and in the earlier cases is usually considered to be a manifestation of indigestion, flatulence, rheumatism or neuralgia. Those patients who have had severe angina usually give a previous history of such attacks of evanescent and apparently trivial pain. True angina pectoris does not necessarily come after exertion. Attacks of severe spasmodic pain, contrary to the opinion generally held, are more frequent at night than in the day time. The mechanical effect of flatulent distension in precipitating true anginal attacks has probably been overestimated. Instead of the sudden spasmodic character of the pain associated with myocardial or aortic degeneration, the patient may complain of a more or less continuous wearing pain, either across the front of the chest, inner side of the arm, or in the neck. Such cases, in the absence of well-marked signs of myocardial disease, may be mistaken for cases of intercostal rheumatism, neuralgia, or brachial neuritis. Similar pain of a persistent and wearing nature may occur in the arm and neck in cases of aortic aneurysm.

SACHS.

Two New Symptoms in the Differential Diagnosis of Cardiac Neuroses—L. BRAUN and A. FUCHS, Wiener klin. Wochenschr., Dec. 2, 1909.

I. Slight pressure with the finger tips upon the apex beat may influence frequency and quality of the pulse. The alteration of the

pulse is very slight in normal individuals; in nervous patients, especially in such with cardiac neuroses, it is quite marked; in anatomical heart affections the pulse alteration varies in the different cases. In nervous individuals diminution of the size of the pulse occurs most frequently; very characteristic seems the behavior after discontinuance of the pressure as the first pulsation (less frequent the second or third) is generally much higher than the following normal beats. The influence exerted by the pressure upon the pulse is mostly noticeable at once. In the presence of anatomical heart affections compression of the apex beat frequently does not call forth any alteration of the pulse. This is especially the case in arteriosclerosis involving the heart. II. In genuine cardiac neuroses with phrenocardia there may exist an interrelation between the carotid pulse and the pulsation over the bulb of the internal jugular vein; the time relation between elevations of the venous pulse and the carotid pulse appears to continuously change. This is less the case on days on which the patient feels better, more pronounced when he feels worse. Authors demonstrated as cause of this phenomenon a varying behavior of the auricular elevation of the venous pulse. This variable behavior disappears after administration of atropine. The auricular fluctuation may be utilized for the recognition and differential diagnosis of some forms or cardiac neuroses.

MILL.

Cardiac Thrombosis—F. SMITHIES, Jour. A. M. A., Oct. 23 1909.

An exhausting account of the clinical and pathologic findings in three cases of the affection. The term "cardiac thrombus" must be reserved for a solid or partly solid structure, primarily formed from blood elements, which develops in one or more chambers of the heart during life. Such a mass may be attached to the cardiac wall by a more or less altered base, or may exist as a free foreign body within a heart cavity. When cardiac thrombi are measured by this standard they are uncommon postmortem findings. The symptomatology of cardiac thrombosis varies with the location of the foreign growth within the heart. It is commonly admitted that, while the condition may be suspected during life, it cannot be accurately diagnosed. When in the course of a cardiac lesion the signs become anomalous and confused, with practical loss of the clinical picture of either definite cardiac lesion or typical cardiac inadequacy, one should suspect the possibility of thrombus formation. The signs and symptoms are those of impeded circulation. These seem to be most marked when the thrombus is located in the auricles. The thrombi located here are apt to be larger and to extend through the cardiac orifices into neighboring chambers. The inability of the more or less weak auricle wall to resist back-flow of blood and dilatation soon brings about pronounced alterations in the general circula-

tion. The three cases detailed by the author present many features in common, while they differ in certain respects. The patients were past middle life. In all there was a fair·possibility of syphilis. In each case the patient exhibited phenomena of cardiac insufficiency, in the main valvular. In all the cases, the mitral valves were affected. In but one case there existed stenosis. For further details the original must be perused.   WESTERN.

Rheumatic Heart Disease in Children—J. W. CARR, The Practitioner, Nov., 1909.

In children when once the heart has been damaged by rheumatism, relapsing, subacute attacks of endo- and pericarditis and also of myocarditis, are very prone to occur, often in the most insidious fashion, and quite independently of any obvious joint inflammation. The importance of recognizing these fresh attacks of endo- and myocarditis cannot be overestimated, since proper treatment may diminish the evil consequences of such attacks. The presence of subcutaneous rheumatic nodules nearly always indicates the existence of active heart disease. They seem to be associated with recurrent and relapsing cases of heart disease only. In a rheumatic child any rise of temperature above 99 deg. F. for which no obvious cause can be detected, should at least excite a suspicion of possible fresh heart inflammation. Joint pains, however slight and transient, call for most careful observation of the heart. Any sudden development of, or increase in, anemia, should be regarded as a suspicious symptom, since not infrequently it is one of the earliest indications of a renewed outburst of heart trouble.   SACHS.

ALIMENTARY TRACT

Uses and Limitations of·Examinations of Stomach Contents—C. G. STOCKTON, Jour. A. M. A., Dec. 11, 1909.

Portions of the test meal obtained when the stomach tube has passed about 14 inches, the food being unmixed with gastric juice, is evidence of obstruction of some kind at the cardia, the retention of food in the esophagus and probably dilatation of the latter. If in pressing the tube onward it stops at the cardia or, engaging in a spasmodic contraction, is held fast, we may infer the existence of stricture or spasm at the end of the esophagus. When the tube is passed 20 to 22 inches we may find stomach contents; and on aspirating this, the tube being pressed further on, after a little resistance, it apparently gets into a second cavity from which stomach contents of different character is removed. This indicates an hour-glass stomach or a spasmodic contraction of the stomach between the second and the last third of the organ. When after passing the tube the usual distance, we find present an unusually large amount of the

test meal at the proper time, it indicates moderate motor insufficiency of the stomach which may depend on atony or on some opposition at the pylorus. If we find a large quantity of the test meal undergoing fermentation, having a "musty" odor, showing a large amount of bacteria and sarcinæ and full secretion of hydrochloric acid, with few lactic acid bacilli, it is indicative of benign obstruction at the pylorus. If we find stagnating food of foul odor, either with or without free hydrochloric acid, with lactic acid present, together with the Oppler-Boas bacilli and unchanged or occult blood, it suggests malignancy and obstruction. When we find the stomach empty or find too little of the test meal and no gastric juice, it indicates excessive motor activity, probably associated with achylia gastrica. A conclusion should not be reached by a single examination. On one day there may be found the absence of gastric secretion and on the next an excess of it. On one day the food may be retained beyond the usual time and on another it may have passed onward too quickly. From this we conclude that the patient is the subject of nervous disturbance, perhaps excited by the very practice of lavage. When we find habitually an acidity above 60, depending on HCl, free or combined, the presence of hyperchlorhydria is suggested. The latter, however, cannot be determined by a definite standard. Overacidity, with delay in digestion of starch, points to hyperchlorhydria. Large quantities of glairy, ropy mucus, unmixed with the test meal, indicates esophageal mucus which has entered the stomach through the irritation occasioned by the passing of the tube. It is not indicative of gastritis. When mucus is found thoroughly intermixed with the test meal, usually not glairy or ropy, it probably comes from the gastric mucosa pointing to catarrhal gastritis. If blood cells are found intact, it speaks for recent hemorrhage or lack of digestive power, or both. The presence of blood with mucus and pus cells, apparently not coming from the respiratory passages, with fragments of tissue, suggests ulceration or degeneration of the gastric mucosa and probably malignancy. When bile is found in stomach contents it probably depends on relaxation of the pylorus with upward pressure of the duodenal contents through contraction of the abdominal muscles, or reverse peristalsis. The slow change of albumin, especially of meat fibers, shows that gastric digestion is retarded. The presence of the odor of fatty acids, of a "musty" or vinous odor, is evidence of fermentation. Too much importance should not be attributed in stomach examinations to the disturbances in secretion. The greatest importance should be given to evidence of disturbances in motion. The diagnosis of stomach diseases should not be made solely by examination of the gastric contents, but by the results of this method considered in connection with the symptomatology and with the estimation of all the facts in the case. Wrong conceptions will arise

from basing a diagnosis on stomach examinations alone, or on too infrequent examinations; or on examinations conducted without rules and without thought.   WESTERN.

Gastric Ulcer in the Young—A. JACOBI, N. Y. Med. Jour., Oct. 30, 1909.

Pain is the most common symptom of gastric ulcer; it is rarely absent, and is caused bv oversecretion, by undue peristalsis, or by pressure. In infants and children this symptom is quite deceptive, for obvious reasons. In adults it is hardly ever absent. Pressure on the full or the empty stomach reveals it in the median line, or slightly to the left, below the ensiform process mostly. Occasionally the pain is first referred to the dorsal spine, or even higher. Eating causes it immediately; it continues during the meal and until the stomach gets rid of its contents. Children betray what seems to be merely loss of appetite and fear to eat. Pain arising half an hour or an hour after a meal means duodenal ulcer or peritonitic adhesions of the duodenum. Pain starting three or four hours after a meal should be referred to the colon. Pain while the stomach is empty, which is quieted by eating, means neurosis. Pain whicii is developed during a meal need not always, however, be referred to ulcer; ice water, cold temperature, emotion may cause it. In many cases the slow but persistent emaciation caused by insufficient nutrition is an indispensable adjuvant symptom. Vomiting is a frequent symptom among adults, not so frequent in the young, though in the very young, the infant, vomiting is a common occurrence in health. When it is produced by ulcer, it behaves like the same symptom in the adult and is mainly caused by excessive acidity. This need not always mean an excess of hydrochloric acid. Fat acids are quite common in infancy and childhood. In a few cases there is no excess of acidity, but alkalinity. They are those of dilatation of the stomach, which depend on stricture of the pylorus, either antecedent to or caused by an ulcer located either in the closest proximity to or on the pylorus. In a few such cases the center of the stomach may contract and form an hour-glass constriction. Hemorrhages are rare. Care should be taken to ascertain that bleeding from the gums, mouth, nose, esophagus, rectal polypi, or varicosities, is not mistaken for ulcer.   WESTERN.

Spastic Hour-Glass Stomach—S. JONAS, Wiener klin. Rundschau, 1909, Nos. 47 and 48.

Description of a case of hour-glass stomach, the diagnosis of which was confirmed radiologically. The symptoms disappeared under treatment. The hour-glass stomach was therefore due to a spasm which may have arisen on the basis of small ulcerations which had subsequently healed. Atropine and a milk regimen may assist

in the differential diagnosis between spastic and organic hour-glass contraction of the stomach.   MILL.

Ventricular Volvulus and Axial Rotation of the Stomach—A. PAYER, Mitteilungen a. d. Grenzgebieten d. Medizin u. Chirurgie, 1909, No. 4.

A discourse on axial rotations of the stomach in diaphragmatic hernia, gastric ulcer, inflammatory processes around the stomach, displacement of adjacent organs and idiopathic volvulus. Author opines that a diagnosis may be attempted in the presence of the following symptoms: Sudden onset of the affection, slight epigastric resistance, sinistrocardia, slowly ensuing inability to swallow, and the presence of Faure's symptom (thoracic pain).   ZIMMER.

Developmental Stages of Pyloric Stenosis and their Radiologic Diagnosis—JONAS, Wiener klin. Wochenschr., Nov. 4, 1909.

Author differentiates three stages of cicatric stenosis of the pylorus. (1) Compensatory stage: moderate width of caudal part, absent atony of fundus as a sign of absent dilatation, antiperistalsis; clinically copious vomiting, colicky pains. (2) Failing compensation; broadening of caudal part, atony of fundus, antiperistalsis; clinically, aside from pain and vomiting, gastric resistance. (3) Broken compensation; marked broadening of caudal part, pronounced atony of fundus, gastric contents retained for twenty-four hours, antiperistalsis.   MILL.

Determination of Trypsin in the Stomach Contents after Oil Test Meals—C. B. FARR, Jour. A. M. A., Dec. 11, 1909.

Author advances the following conclusions: The duodenal contents may frequentily be obtained after the oil test meal, though sometimes there is doubt as to the character of the fluid aspirated. On this account it may be possible to exclude atrophy of the pancreas, but only under very unusual conditions can we demonstrate its presence. In a number of diseases the examination has yielded suggestive results. The casein method of Volhard is a delicate qualitative test for trypsin, but for this purpose needs simplification.
                                        WESTERN.

Functional Insufficiency and Functional Disturbances of the Digestive Apparatus in Children —P. SELTER, Archiv. f. Kinderheilkunde, Vol. LI, Nos. 1-4.

A systematic examination of the stools of children, which is universally neglected, is essential for the recognition of functional deficiencies and disturbances of the alimentary tract in children. Coprological examinations may often be performed in a brief period of time and are mostly very simple.   MILL.

Postoperative Duodenal Ileus—C. WEINBRENNER, Münchener med. Wochenschr., Oct. 26, 1909.

Vomiting is the most important phenomenon in duodenal ileus. Its onset varies; in some cases it begins suddenly in a violent manner, in others it gradually increases in severity. The vomit consists of strongly bile-stained, later of brown-tinted (admixture of blood) watery masses which never have a fecal odor. Transudation into the stomach and gas production may occur in a considerable degree. The patients have a tormenting thirst; frequently pain is complained of in the region of the stomach and of pressure sensitiveness in the epigastrium. The dilatation of the stomach ensues gradually and lasts for a number of days, it may, however, be complete after twenty-four hours. In the beginning, gases and feces may yet be passed; they cease, however, when occlusion of the duodenum is complete. The temperature is normal, as a rule, while the pulse becomes soon more frequent and declines in quality. Concurring with the latter there is noted rapid decline of the patient. The stomach is distended while the lower portions of the abdomen remain flaccid. However, there are cases in which the entire abdomen is uniformly distended; in such cases the stomach tube has to be resorted to in order to recognize the condition. Symptoms of duodenal ileus may be pronounced before there exists gastric dilatation.
MILL.

Typhlatony (Cecal Dilatation)—F. FISCHLER, Mitteilungen a. d. Grenzgebieten d. Medizin u. Chirurgie, 1909, No. 4.

Cecal dilatation exhibits a definite syndrome. There are no characteristic attacks in the previous history; the pains are paroxysmal in character, resembling those of acute appendicitis; there is no elevation of temperature; there is superficial resistance of the cecum and constant ileocecal gurgling during the attack; the pressure pain is felt somewhat further back in the intervals; the stools occur irregularly and contain more or less mucus.   ZIMMER.

Metastatic Involvement of Appendix—OFFERGELD, Archiv f. Gynäkologie, Vol. XIC, No. 1.

A girl, nine years old, became affected with bilateral suppurative tonsillitis and the next day with perforative appendicitis. The identical pyogenic streptococci were found in the tonsils and the extirpated appendix. The appendicitis in this case was probably metastatic in character, as the streptococci could also be demonstrated in the blood vessels of the small mesentery.   MILL.

Epidemic Appearance of Appendicitis—W. KLINK, Therapie d. Gegenwart, 1909, No. 10.

Author has observed 26 cases of appendicitis (21 in men, 5 in women) in a small town during the period of three months. There

seemed to be no cause for the epidemic-like appearance of the affection. During the three months there occurred, however, in the little town many "colds," very often complicated by suppurative processes, and the combined affections were likely at the bottom of the appendical involvement.   FRY.

Tuberculosis of the Colon—E. W. H. GROVES, Bristol Medico-Chirurgical Jour., Sept., 1909.

The colon has a peculiar form of reaction so unlike ordinary tuberculous manifestations, that it has until recently been confounded with carcinoma. In 85 per cent. of all cases of intestinal tuberculosis, the disease occurs in the cecum. The cecum alone is affected in 9 per cent. of the cases. There are two forms of pericecal tuberculosis—the enteroperitoneal and the hyperplastic. The enteroperitoneal form attacks the mucous, submucous and serous coats of the bowel, producing ulceration and caseous masses. The hyperplastic form starts in the neighborhood of the ileocecal valve and produces great induration of the cecum and the adjacent part of the colon. The disease is most common between the ages of twenty and forty, and is decidedly rare before or after these periods. The two sexes are affected alike. There are two different symptom groups which correspond very closely in their incidence with the two pathological varieties of the disease. These are (1) local peritonitis, (2) chronic obstruction associated with a tumor. In the enteroperitoneal form of the disease, the attack begins like appendicitis, but is often much less abrupt. With the occurrence of a sudden onset of right iliac pain, there generally arises some painful diarrhea, in which blood and mucus are passed in considerable quantities. The indurated mass which has formed in the right iliac fossa, instead of getting smaller becomes larger and more dense. In the course of weeks or months, a stercoral abscess is developed, and this by bursting gives rise to fistulæ. In the hyperplastic form the onset is very insidious. Obstinate constipation, colicky pains, abdominal gurgling, and occasional diarrhea are caused by the slow progressive stenosis of the bowel. When this group of symptoms is well established, the abdomen exhibits an indurated tumor in the right iliac fossa, and the visible peristalsis of hypertrophied bowel, which is so characteristic of chronic obstruction.   SACHS.

Functional Diagnostics of the Liver—H. HOHLWEG, Deutsches Archiv f. klin. Medizin, Vol. XCVII, Nos. 5 and 6.

Functional diagnosis of the liver was determined by means of alimentary levulosuria. The most pronounced diminution of tolerance for levulose was found in cirrhosis, catarrhal icterus and obstruction of the choledochus by a calculus. Enlargement of the liver,

as in leukemia, congestion, etc., did not give rise to alimentary levul-
osuria, as a rule. WESTERN.

Liver Dulness in Abdominal Affections—KIRCHHEIM, Deutsches Archiv
f. klin. Medizin, Vol. XCVII, Nos. 5 and 6.

Disappearance of liver dulness may be caused by border position
of the organ (meteorism, tension of the abdominal wall, diaphrag-
matic elevation) or by interposition of the intestine between liver
and abdominal wall. In the latter case the diaphragm is usually
depressed downward, a condition prevailing in the first stages of
abdominal diseases. Diminution of liver dulness together with the
occurrence of active tension of the abdominal wall are of importance
in the diagnosis of peritonitis. WESTERN.

**Prognosis and Diagnosis of Progressive Peritonitis with Reference to
Arneth's Blood Pictures**—E. SONNENBURG and R. KOTHE, Deutsche
Zeitschr. f. Chirurgie, Vol. CI, Nos. 1 and 2.

Results of the examination of 250 cases, among which there
were 200 cases of appendicitis concurring with peritonitis, in most
instances. Authors confirm Arneth's conclusions in every detail.
The main value of Arneth's method consists in the supplementation
of the quantitative examination of the blood. Synchronous deter-
mination of number and type of the leucocytes permit of the recog-
nition of the processes taking place in the blood and of the severity
of the infection. MILL.

Pseudoperitonitis due to Addison's Disease—M. LANDOW, Deutsche
Zeitschr. f. Chirurgie, Vol. CI, Nos. 1 and 2.

The report of a case of a man 19 years old, affected with Ad-
dison's disease caused by bilateral adrenal tuberculosis. The cardinal
symptom, upon which the erroneous diagnosis of peritonitis was
founded, consisted in a navicular retraction of the much contracted
abdominal walls. MILL.

Retroperitoneal Sarcoma—G. J. JOHNSTON, Dublin Jour. of Medical
Science, Oct., 1909.

The diagnosis of retroperitoneal sarcoma is very difficult in the
early stages. Obscure gastric symptoms, abdominal pain, varying
from the merest discomfort to acute colicky pains, occasional pain
in the back, the presence of resistance and tenderness in the deep
abdomen, pushing forward of the colon, diarrhea or constipation, the
loss of color, weight, strength and appetite, and the gradual progress
from bad to worse of the patient's general condition, taken in con-
junction with the lack of any symptoms directly referrible to dis-
ease of the liver, pancreas, or intestine, should lead to a suspicion of
retroperitoneal sarcoma. SACHS.

NERVOUS SYSTEM

The Cremasteric Reflex—E. M. CORNER, British Jour. of Children's
Diseases, Nov., 1909.

The cremasteric reflex consists in the retraction of the testicle
on stimulating the inner and upper aspect of the thigh. It is a type
of the superficial reflexes which are caused by stimulating the super-
ficial nerves of the skin. The afferent and efferent nerves for its
production are in the trunks of the first and second lumbar nerves,
and the "center" is in the lumbar enlargement of the spinal cord.
The reflex is best in healthy children, and is weakened or abolished
in ill health. It has therefore some value in detecting or confirming
malingering of children. Any general disease will weaken or abolish
this reflex. In the early stages of rickets the cremasteric reflex is
much weakened and often abolished.   SACHS.

On Lymphocytosis of the Cerebrospinal Fluid in Relation to Tabes—
J. S. BURY and A. RAMSBOTTOM, Quarterly Jour. of Medicine, Oct., 1909.

Lymphocytosis was found in 29 out of 34 cases of tabes and
general paralysis, a percentage of 85. In the remaining 15 per cent.
there was lymphocytosis, and no evidence of antecedent syphilis
could be obtained. The authors conclude that lymphocytosis is not a
constant phenomenon in tabes and general paralysis, and that, al-
though syphilis may play an important part in the production of these
diseases, it is not an essential factor.   SACHS.

Diagnostic Import of Albuminuria in Meningeal Hemorrhages—GUILLAIN
and VINCENT, Semaine médicale, Oct. 27, 1909.

The case of a woman with meningeal hemorrhage, the only
clinical evidences of which were violent headache, chilly sensation
and general discomfort. The urine exhibited enormous amounts of
albumin; for this reason, the possibility of a uremic condition had
to be taken into consideration. Lumbar puncture, showing a bloody
spinal fluid, determined the nature of the affection. The future
course was favorable; the absorption of the blood was followed by
diminution and, finally, cessation of the albuminuria. Enormous
excretion of urinary albumin as in this case, according to author, is
a truly pathognomonic symptom of meningeal hemorrhage. MILL.

Hysterical Polydipsia—HAMAKER and DE VRIES REILINGH, Tijdschr. voor
Geneeskunde, 1909, No. 22.

Hysterical polydipsia may be differentiated from genuine dia-
betes insipidus by the determination of the percentage contents of
sodium chloride in the urine after the ingestion with the nourishment
of various amounts of table salt. In hysterical polydipsia the sodium

chloride excretion in the urine fluctuates; it is dependent upon the amount of the intake of salt and liquids.   WEBB.

Brain Tumor—W. G. SPILLER, Jour. A. M. A., Dec. 18, 1909.

A discussion of certain features connected with the symptomatology of brain tumor. The gradually developing hemiplegia, the slow appearance of papilledema in certain cases of glioma, and later its extremely rapid development, the resemblance of tumor of the pons to tumor of the Gasserian ganglion, and the signs of tumor of the occipital lobe, especially the dissociation of the color-sense in tumor of the left occipital lobe, are dealt with in detail according to personal experience.   WESTERN.

Disturbances of Carbohydrate Metabolism in the Insane—E. SCHULTZE and KNAUER, Allgemeine Zeitschr. f. Psychiatrie, Vol. LXVI, No. 5.

Glycosuria occurs frequently in cases of depression and anxious melancholia. The glycosuria is symptomatic; it is not characteristic for a definite type of mental disease, but may arise in depression states of manifold causation. These conditions have nothing in common with diabetic psychoses. Pentosuria may also be present under similar conditions.   WESTERN.

Bodily Manifestations in Dementia Præcox—TOMASCHNY and E. MEYER, Allgemeine Zeitschr. f. Psychiatrie, Vol. LXVI, No. 5.

Headache, vertigo, disturbances of digestion, pain and paresthesias in the area of peripheral nerves are often present. These manifestations are of clinical import because they may form the basis of delusions in respect to the body condition, because they may approximately indicate the beginning of the mental disturbance, and because their multitude may prompt an unfavorable prognosis. These manifestations are the result of a systemic disease which may bear an autotoxic character. The objective bodily symptoms point more to a general abnormal excitability of the nervous system than to an organic disease of the brain. There are distinct resemblances to hysteria. Nevertheless, the totality of the clinical picture forces one to conclude that an organic affection of the brain is the cause of dementia præcox, although the organic changes are not as uniform and characteristic as in paralysis.   WESTERN.

Acute Psychoses Terminating in Death—THOMA, Allgemeine Zeitschr. f. Psychiatrie, Vol. LXVI, No. 5.

This syndrome, known as delirium acutum, undoubtedly comprises psychoses which are entirely discrepant clinically. The seven cases related by the author were founded on paralysis, senile psychoses, and primary dementia; in one instance there was an acute circulatory disturbance.   WESTERN.

URINARY ORGANS—MALE GENITALIA

Cystitis Dolorosa—C. POSNER, Berliner klin. Wochenschr., Oct. 18, 1909.

The symptomatic designation "cystitis dolorosa" covers a multitude of discrepant pathologic processes. The exact diagnosis of the pathologic condition is absolutely essential for a radical or even a symptomatic treatment. Author describes the various clinical pictures and draws especially the attention to the nontuberculous ulcerations of the bladder, the existence of which has as yet not received sufficient consideration.   MILL.

Contribution to our Knowledge of Primary Pyelitis—L. SAATHOFF, Münchener med. Wochenschr., Nov. 2, 1909.

According to Lenhartz there exists not only a secondary, but also a primary inflammation of the renal pelvis appearing mostly in an acute form. The principal data in connection with the affection are: Appearance principally in women, frequently in connection with menstruation. Mostly ushered in by high fever and also chills. Spontaneous pressure pains of the affected renal area, frequently with symptoms of peritoneal irritation, especially circumscribed tension of the abdominal walls. Turbid urine in which bacteria may be demonstrated. Course of fever is brief in most instances; continual fever declines by crisis or lysis. Occasionally the febrile period continues for a protracted period. Frequent recurrences mostly in connection with menstruation. In most instances the colon bacillus is the sole infective agent. The diagnosis must be based upon the various clinical phenomena and the urinary findings. The urine must be obtained by sterile catheterization, and the sediment be examined microscopically. The demonstration of plump, short, with difficulty movable bacteria clinches the diagnosis colipyelitis in from 80 to 90 per cent. of the cases. In the remaining cases culture methods have to be resorted to.   MILL.

Renal Involvement in Pneumonia—E. BOEHME, Inauguraldissertation, Leipzig.

Among 52 patients affected with pneumonia 44 (84.6%) exhibited albuminuria. In 79% of the cases granulated and other casts could be demonstrated. The kidney is much more frequently affected by the pneumonic infection as is generally assumed. FRY.

Neoplasms of Kidney and Ureter—J. B. SQUIER, Boston Med. and Surg. Jour., Oct. 14, 1909.

The symptoms of renal tumor are varied and inconstant. The affection may first reveal itself by hematuria, with perhaps obstruction of ureter or urethra by clots, with subsequent infection, and present a picture of calculus, pyelitis or cystitis. Hematuria often is intermittent, the urine being free from blood for weeks or months. In the blood-free intervals the urine may be normal. The tumor may also produce pressure atrophy of the kidney, with symptoms

only of renal insufficiency and urinary findings of a chronic nephritis. Cachexia, usually a late, may be the first symptom. When associated with vomiting, which is common in these cases, the picture may simulate gastric carcinoma. The tumor may give no symptoms until its presence produces a mass which may be seen or felt. Lumbar pain due to pressure is by no means peculiar to the disease. Pressure on the large veins may produce dilatation of the superficial abdominal veins or homolateral varicocele. Vomiting is a symptom not often emphasized. It is frequently an early symptom. Jaundice occurs now and then. Hypernephroma may cause a pigmentation of the skin, related perhaps to the pigmentation of Addison's disease, but it is often local. Subnormal temperature is an occasional symptom; many cases have a slight elevation of temperature. The presence of bone metastases may be a differential point in favor of hypernephroma. The X-ray has added much to our ability to differentiate tumors of the kidney from those of other organs and, what is of great importance, to discover the presence of kidney enlargement before the growth has become palpable. Ureteral meatoscopy and renal urinary differentiation have become routine diagnostic procedures. Cryoscopy and the so-called functional test of the urine are of more value in deciding for or against operation than as aids to diagnosis. The data derived from functional tests are only of value when used in conjunction with other findings. WESTERN.

Polycystic Disease of the Kidney—C. COOMBS, Quarterly Jour. of Medicine, Oct., 1909.

Toxic capillary hemorrhages sometimes occur in polycystic disease of the kidney. Toxic symptoms appear when the available secreting tissue of the kidney has reached an irreducible minimum. These toxic symptoms, taken with the effects of polycystic disease on the heart and blood vessels, imitate very closely the analogous phenomena of chronic nephritis, and especially those of the contracted white kidney. An analysis of 44 cases shows that in 22 the symptoms of the last phase of the disease were those of uremia.
SACHS.

Diagnosis of Bilateral Cystic Kidneys—M. KROTOSZYNER, Am. Jour. Med. Sciences, Sept., 1909.

Polycystic degeneration of the kidneys is in almost all instances a bilateral affection. In cases in which, for the time being, one kidney appears to be anatomically and functionally healthy, an involvement of this organ may be expected to develop later. Determination of the kidney function is indispensable prior to decision upon any operative procedure. Excruciating pain, general sepsis caused by suppuration of cysts, profuse hematuria, and distressing symptoms due to the presence of enormously large cysts are, under favorable conditions (good renal function), indications for operative interference. WESTERN.

FEMALE ORGANS OF GENERATION—PREGNANCY —PARTURITION—INFANTS

Ovarian Displacements—C. H. STRATZ, Zeitschr. f. Geburtshilfe u. Gynä-kologie, Vol. LXV, No. 2.

Displacements of the ovaries occur on the basis of congenital or acquired abnormal elongation and weakening of the infundibulo-pelvic and ovarian ligaments, and they are also due to the extraliga-mentary position of the ovaries. Mechanical insults and alterations of the topographical conditions of the pelvic viscera stand at the foundation of ovarian displacement. Anteflexio ovarii occurs more rarely than retoflexio ovarii and descensus ovarii. In the wake of deviations there may ensue congestion, edema, hemorrhage, also oophoritis, etc.   MILL.

Vicarious Menstruation in the Form of Labial Hemorrhages—A. HAUPT-MANN, Münchener med. Wochenschr., Oct. 12, 1909.

A neuropathic girl, admitted to the hospital when 18 years old, experienced since her fourteenth year periodic hemorrhages under the mucosa of the upper and lower lips. After a few days the hemorrhages would always subside. Later on the hemorrhages en-sued regularly every four weeks; some time afterwards these bleed-ings occurred at irregular intervals. At the age of 15 menstrua-tion set in; the menstrual flow was mostly slight and of brief dura-tion. It did not occur regularly every four weeks, but in its stead the labial bleedings appeared. Whenever the latter ensued the upper lip began to swell until it presented a snout-like appearance. The lip felt pretty tough and was painful on each occasion. About a day and a half afterwards the lower lip offered a similar aspect. After about three days the swelling had generally subsided.   MILL.

The Climacterium and Functional Disturbances of the Glands with Internal Secretion—A. GLUZINSKI, Wiener klin. Wochenschr., Dec. 2, 1909.

It is well known that there exists a connection between the function of the genital tract and the thyroid gland. We note the enlargement of the gland at the time of puberty, paroxysmal pal-pitation and a symptom complex resembling Graves' disease; the peculiar behavior of the thyroid at the time of gestation, etc. The syndrome with which we meet at the climacteric period shows so many different manifestations and is so complicated that, clinically speaking, we assign the abnormal state in one instance to hysteria, in others to neurasthenia, and the ensuing obesity to loss of ovarian function. However, many of these symptoms form the picture of a myxedematous state, and are the result of functional deficiency or loss of thyroid activity. The clinical pictures vary much as to the degree of severity: there are typical myxedematous cases and such in which the myxedematous manifestations are extremely slight. Typical cases appear rather rarely; in most instances we have to

deal with abortive forms; the symptoms supervene two or three years prior to the beginning of the menopause, and may continue after cessation of the menses.   MILL.

Is There a Jaundice Peculiar to Woman?—P. RISSMANN, Zeitschr. f. Geburtshilfe u. Gynäkologie, Vol. LXV, No. 2.

There is neither a menstrual icterus nor a special icterus gravidarum. It has as yet not been determined whether the so-called recurrent gestation icterus is caused by an embryogenous intoxication. The existence of such a form of icterus cannot be maintained any longer. Hepatic affections with recognizable icterus, which are rarely observed in toxemia, belong to the clinical syndrome of eclampsia. The designation "grave icterus of gravidity" is therefore misleading and should be abandoned.   MILL.

Metropathia Hæmorrhagica—O. PANKOW, Zeitschr. f. Geburtshilfe u. Gynäkologie, Vol. LXV, No. 2.

Author accepts the term "metropathia," introduced by Aschoff, because it does not anticipate anything and only points to an abnormal state of the uterus. The loose employment of the designation chronic metritis has caused nothing but confusion so far as anatomical and clinical diagnostics are concerned. Uterine hemorrhages do not exhibit a definite anatomical substratum which is dependent upon changes in the myometrium or endometrium.   MILL.

Glycosuria and Pregnancy—REICHENSTEIN, Wiener klin. Wochenschr., Oct. 14, 1909.

In about ten per cent. of the cases of pregnancy there ensues diminished assimilation of sugar. Glycosuria ex amylo and "spontaneous" excretion of sugar, similarly as in diabetes, may even occur occasionally. Alimentary levulosuria is produced still more frequently. It appears that these anomalous processes are the result of the altered activity of the ovaries or the gravid uterus upon other glands with internal secretion regulating carbohydrate metabolism.
                                                          MILL.

Combined Heart Disease in a Nursling—L. BARON, Archiv f. Kinderheilkunde, Vol. LI, No. 1.

Description of a case, with autopsy, of endocarditis with pericarditis obliterans in a nursling six months old.   MILL.

Typhoid Fever in a Nursling—C. C. DELPRAT, Tijdschr. voor Geneeskunde, 1909, No. 2.

A detailed report of a case of typhoid fever in a child four months old. There existed continual fever, profuse diarrhea, slight albuminuria during the febrile period. Agglutination test was positive even in a dilution of 1 : 1000. The disease lasted five weeks and terminated in recovery.   WEBB.

Bibliography

THE EXAMINATION OF THE FUNCTION OF THE INTESTINES
BY MEANS OF THE TEST DIET. Its Application in Medical Practice
and its Diagnostic and Therapeutic Value. By Prof. Dr. ADOLF SCHMIDT.
Authorized Translation from the Second Revised and Enlarged German
Edition. By CHARLES D. AARON, M.D., Professor of Diseases of the
Stomach and Intestines in the Detroit Post-Graduate School of Medicine;
Clinical Professor of Gastro-Enterology in the Detroit College of Medicine;
Consulting Gastro-Enterologist to Harper Hospital, etc. Philadelphia,
F. A. Davis Company, 1909.

Whatever we may think of the value of a test diet for the recog-
nition of functional intestinal disorders, that much is certain, Schmidt
has done the pioneer work in that direction. The new edition con-
tains additional material concerning intestinal disorders caused by
functional irregularities of the stomach, the liver and the pancreas.
The little book should be in the hands of all who profess to do gastro-
enterological work. The translation by Dr. Aaron is praiseworthy in
every respect. The colored plates are well executed.   H. S.

MEDICAL DIAGNOSIS. A Manual for Students and Practitioners. By
CHARLES LYMAN GREENE, M.D., St. Paul, Professor of Medicine and Chief
of the Department in the College of Medicine, University of Minnesota;
Attending Physician, St. Luke's Hospital and the City and County Hos-
pital; Chief of the Medical Clinic in the University Hospital, etc. Third
Edition, Revised. With 7 Colored Plates and 248 Illustrations. Phila-
delphia, P. Blakiston's Son & Co., 1910.

In commendation of the present edition we can only reiterate
what we said when reviewing a previous edition of this book: "No
topic has received undue or unmerited attention at the expense of
another; no over-statements on the one side are counter-balanced by
under-valuations on the other. The author, a leading practitioner of
the Northwest, has preserved the sense of proportion throughout,
thus making his book exceptionally valuable and trustworthy." H. S.

ESSENTIALS OF LABORATORY DIAGNOSIS. By FRANCIS ASHLEY
FAUGHT, M.D., Director of the Laboratory of the Department of Clinical
Medicine and Assistant to the Professor of Clinical Medicine, Medico-
Chirurgical College, Philadelphia. Containing an Indican Scale in Colors,
Six Full-Page Plates and Numerous Engravings in the Text. Philadel-
phia, F. A. Davis Company, 1909.

This book contains in small compass that which is indispensable
for practical work in the clinical laboratory. The author, an ex-
perienced laboratory instructor, has prepared this compendium in ac-
cordance with a well conceived plan. It is a useful little work. H. S.

THE

ARCHIVES OF DIAGNOSIS

A QUARTERLY JOURNAL ;DEVOTED TO THE STUDY
AND THE PROGRESS OF DIAGNOSIS AND PROGNOSIS

Special Articles

CLINICAL DEDUCTIONS IN THE STUDY OF TUBERCULOSIS

By WILLIAM PORTER

President, Board of Managers, Missouri Sanatorium for Incipient Tuberculosis; Medical Director, Municipal Commission on Tuberculosis; Member International Anti-Tuberculosis Association

St. Louis

The last decade has brought a wonderful change in the practical activities opposed to disease. No longer do we have the complex prescriptions with many ingredients and time-worn dosage and the classification of the case with but a superficial examination and the addition of artificial conditions to the tangle of perturbed natural functions. Not that I would decry the teachings of the fathers nor the practice of those from whom we have much of our best inspiration, but with the struggling light which they helped to furnish, the delvers in science have discovered electric currents of new beauty and accuracy connecting cause and effect as never before. So it is that the physician of to-day has become the sanitarian, the hygienist, the bacteriologist and diagnostician. The interrogation "Why" precedes and often precludes the prescription.

In no department of our work has there been more advance along the line of positive diagnosis and definite therapeutic aid than in the early recognition and care of tuberculosis. The object of this writing is to present a few suggestions which I have found of value

in diagnosis and some deductions that have helped me in the care of the patient. It will not be expected that time be given here to the enumerating of all that pertains to examination and care, but rather to the insistence of some points that have not as yet been fully recognized. It is the early recognition of tuberculosis that is most important. In the two and one half years of average duration, a diagnosis during the first three months is many times more important than at any subsequent time.

Early Symptoms. Without waiting to discuss the propositions, let me say that it is probable that tuberculosis is primarily a lymphatic process and the lungs are the organs most exposed where the bacilli pass from the lymph into the blood. Flick says (International Congress, 1908): "The apices of the lungs along their posterior pleural border probably are the primary seat of lung tuberculosis. The first growth is small and does not usually attract attention." Even before the physical signs can be determined there may be much suggestive in the general condition. Deviation from the normal in weight and strength and color, slight afternoon rise in temperature, a fickle appetite and quickened pulse demand at once the most careful physical examination, an examination which may require the most consummate skill and judgment to be conclusive or may fail in exactness till time has thrown the limelight of earnest research more directly upon the clinical picture.

In all examinations we should have a regular method of procedure and I know of none better than the old subdivisions as found in our text-books, adding to each the modifications of latest research. It is of these modifications or additions that I would here speak briefly.

Inspection. The sight-reading of the human chest may attain wonderful exactness. Remembering always the value of symmetry, the least deviation from the normal in movement, shape or color should be noticed. Too much emphasis cannot be placed upon retardation of movement at any given place. The careful diagnostician must study the chest surface as the explorer studies his topographical chart. The diminution of the movement of the diaphragm as indicated by Litton's shadow, often indicates pleural hypersensitiveness due to infection of a lobule near the surface of the lung.

Palpation. To the trained touch much evidence may be gained as suggested by recent studies in muscle rigidity. When the active pathological processes are found in the lung, there are certain definite signs. Some of these I wish to cite. One of the earliest signs of localized disease in the lung is muscle tension of the corresponding side. I am not sure whether this phenomenon is found in active pulmonary disease other than tuberculosis, but certain it is that it is well worth study. We have long known that muscle tension has value in acute abdominal inflammations and in some reflexes of the extremities. It is surprising how delicate is the response in many cases. Since Dr. Pottenger first called my attention to this sign I have found it in the majority of all incipient cases. Recently, at the State Sanatorium I examined a number of patients whose clinical history I did not know. With my eyes closed, that I might not be influenced except by touch, I was astonished to see how accurate the evidence was, not in the advanced cases so much, but in the early cases where the pathology is in its beginning and the ordinary interrogations are inadequate. To estimate and locate this tension the finger tips should be placed lightly on either side. The upper third of the anterior chest wall gives the best result and it is not necessary that the touch should be over the intercostal spaces. So far as I have been able to tell, the site of tension corresponds with the affected area underneath, and this phenomenon may be found in other cases than those of tubercular infection. Recently I found it well marked in a case of acute myocarditis. There are two divisions of this most interesting subject, (*a*) marked rigidity due probably to reflex stimulation, (*b*) those of more chronic type where the reflex is wanting. In these cases this sign depends upon our ability to note the difference between tissues of different density, even when lying within the hollow cavities of the body, by extremely delicate palpation.

Mensuration. The ordinary method by the tape line is of little value. If large calipers are used and the antero-posterior measurement taken at corresponding points, a very slight difference in diameter and movement can easily be noted.

Percussion. Light touch palpation is valuable not so much because of the sound elicited as on account of the impression received by the trained touch. The direct stroke, as shown by Goldscheider and reviewed by Taussig (Interstate Medical Journal, 1909, p. 843),

gives us a large field for exploration and brings back this method of interrogation to a most valuable place. The percussion of the electric vibrator through the consolidated tissue, as shown by touch and stethoscope, is a sign to which I would call special attention, but which I cannot here discuss. Often the vibration or even gentle percussion over a sensitive area will produce cough (tapoage).

Auscultation. If sight and touch are so important, how much more is that method by which we note the change and new sounds of the earliest pathological process. When the bacillus invades the lining of a bronchiole the irritation dependent upon the colonization, results in small points of inflammation or tubercles, in the lumen of the tubule. These rough points interfere with the passage of air in and out of the bronchiole and produce a slight change in the respiratory note, hard to hear in many cases, localized and often not to be recognized except by comparison with the other side. This sound must not be confounded with the increased pitch in the fine bronchial murmur, so often heard in bronchitis. The other evidences at this early stage may be very indefinite. Often there is only a slight rise in temperature and sometimes an irritating, dry cough. When the early invasion is in the vesicle there is swelling and loss of function. The elasticity of the intra-vesicular wall is impaired and we have what used to be thought the earliest sign, i.e., prolonged expiratory murmur. With this and the bronchial roughness and a slight fever and cough, the patient should be given the benefit of the doubt and carefully watched. Bacilli are not found in this stage, as a rule. In the more advanced stages the evidence is generally so marked that there is little danger of error. Crepitation, dulness, bronchophony, conveyed whisper, and amphoric notes are not likely to be misunderstood.

Importance of Posterior Lesion. Diminution of the percussion note, with harsh breathing, and crepitation heard in the upper interscapular region, is suggestive of lymphatic infection and infiltration of the bronchial glands. The cases we have noted of this class run a much more rapid course than those in which the infection has been through the respiratory tract. It is true that the premise is hard to prove, but the fact remains that the cases most difficult to control have been those in which the physical evidence was most marked in

the upper dorsal region. I would again urge that no chest examination is complete without most careful investigation of this locality.

Specific Tests. If there is need for a positive decision at once, the tuberculin test may be made. Several of the recent methods are harmless but by no means infallible. I am using a modification of the Morro and v. Pirquet tests. Scarification is followed by the application of old tuberculin ointment and the test point and the control are covered with collodion. As a rule, however, I believe that time is the best test, and if the patient is under observation, he is taking no risk. The v. Pirquet test seems the more reliable, but even its true value seems to be best shown in children. In the adult I have sometimes found a reaction where there was no history or suggestion of tuberculosis. In these, there may have been a latent condition, undiscoverable otherwise. It is curious that in undoubted and rapidly progressing cases there may be negative results.

The Channels of Invasion are worthy to be considered in their relation to diagnosis. At present the respiratory tract is by many considered the main channel, but with a larger opportunity for investigation than formerly, I am convinced that many more pulmonary cases are directly infected through the lymphatic and blood channels than are recognized by the average physician. The phenomena of invasion by the bronchial route have been studied not only clinically but in their pathological sequence, and to such an extent has this study served that it has, until recently, overshadowed the other, scarcely less important questions of infection along the lymph channels, or around the arterioles and capillaries by the blood current. I would emphasize the frequency of infection through the lymph channels as a factor in the etiology of tuberculosis. Roemer and Behring have shown that albuminous bodies may pass through the walls of the alimentary canal and into the blood and lymph, unchanged in new-born animals. Ribbert believes that most cases of pulmonary tuberculosis are hematogenous. George Wood found by animal experimentation that the tonsillar tissue is more liable to tuberculous infection than any other part of the upper respiratory tract, and this in part explains the frequency of tuberculosis of the cervical lymphatics.

THE ETIOLOGY AND DIAGNOSIS OF ARTERIO-SCLEROSIS

A CRITICAL STUDY

BY FREDERIC E. SONDERN

Professor of Clinical Pathology, New York Post-Graduate Medical School;
Director, Clinical Laboratory, New York Lying-In Hospital

New York

It is not many years ago that arteriosclerosis was looked upon as a senile change which could, however, develop prematurely in young and middle-aged persons; heredity, syphilis, lead poisoning and the excessive use of alcohol or tobacco being considered strong predisposing factors. As recently as five years ago Klemperer (Therapie der Gegenwart Nov. 1905) described four cases, assigning the excessive use of tobacco as the cause in two, respectively 37 and 44 years of age, and sexual excess as the cause in the other two cases, respectively 35 and 45 years of age, these elements in the clinical history apparently being considered sufficient etiological factors.

In recent years, however, micropathology (Bender, Therapie d. Gegenwart, 3. 1909), experimental research, improved biological chemistry, and refined diagnostic methods have evolved many interesting points in connection with arteriosclerosis which have brought about a decided change not only in the opinions concerning the pathology of the condition, but also in those concerning the etiology.

Clifford Allbutt divides the cases into three classes.

1st. Involuntary. The process of involution in the aged, not necessarily associated with a rise in the arterial pressure.

2nd. Mechanical. The result of long continued high blood pressure due to any cause.

3rd. Toxic. Due to lead, alcohol, syphilis or similar causes, usually in young people and usually with increased blood pressure. Marchand (Münchener med. Wochenscher., 1904) ascribes all cases to the mechanical fault of increased arterial pressure, due to local injuries or to the general processes such as intoxicants or nutritional disturbances. Osler (7th Edition, 1909) claims that it would seem

due to hypertension in all cases, while Welch of Johns Hopkins believes that the hypertension is not the direct cause, but that this also is due to the causes which lead to arteriosclerosis. It is evident from this brief review of the opinions quoted that while a specific cause is not known, the conditions which play an important part in the etiology of arteriosclerosis are intoxications and local nutritional disturbances in addition to the usually quoted causes, old age, syphilis and excessive muscular work.

Query: Is it possible to formulate a properly confirmed hypothesis which will explain all the cases as due to a single etiological factor?

It shall be my effort to substantiate the belief that arteriosclerosis is due to the toxic influence of products of incomplete metabolism developed as the direct result of deficient body oxidation.

Several years ago I published a short paper on "Faulty metabolism as a cause of chronic interstitial nephritis" which was based on the clinical history and urinary analysis data of 28 cases observed from 5 to 19 years. Since then Ditman published his praiseworthy research on "Deficient oxidation in its relation to the etiology of nephritis" (N. Y. Med. Jour. 1909). It has thus been clinically suspected and experimentally demonstrated that suboxidation is at least the chief cause and probably the usual cause of contracting kidney. All the modern refinements of ·pathological research have not succeeded in separating chronic interstitial nephritis from arteriosclerosis. It is true that profound changes in the vessels may occur in different parts of the body without renal involvement. It is also true that a contracting kidney may exist without arteriosclerotic changes elsewhere, and that arteriosclerotic changes may exist in the renal vessels without the additional pathological changes usually ascribed to chronic interstitial nephritis. In clinical, pathological and experimental research, however, all these conditions are not only closely allied but the one almost invariably leads to the other. Your patient 45 years old, who has been a heavy eater, a moderate toper, an excessive smoker and has led a strenuous business life, comes to you, with the increased blood pressure, the accentuated second heart sound, and the head symptoms—dizziness, headache, momentary attacks of unconsciousness, etc.—of an arteriosclerosis. His urine may show no evidences of a renal lesion, but it does show

evidences of suboxidation in many instances. He ultimately dies of apoplexy or contracted kidney. Your postmortem records will give you the same information—general arteriosclerosis followed by chronic interstitial nephritis or chronic interstitial nephritis followed by arteriosclerotic changes in other parts of the body. Experimental research tells the same story. It is therefore reasonable to infer that two conditions so closely connected are most probably due to the same cause as well. Thus my problem is twofold. First to prove that the conditions usually accepted as causative factors of arteriosclerosis are capable of producing suboxidation, are the result of suboxidation or are at least accompanied by suboxidation. Second, to supply evidence that the toxic influence of products of incomplete metabolism can produce arteriosclerotic changes.

Are the usually ascribed etiological factors of arteriosclerosis the cause, the result or the accompaniment of suboxidation? Allow me to consider them from this viewpoint.

The excessive use of alcohol has generally been considered the most frequent cause of arteriosclerosis. This opinion has been rudely shaken, in America at least, by the writings of Cabot and others who claim that accurate statistics fail to prove this point. In the foreign literature it is also beginning to take second or third place, for example, Edgran claims it the cause in 25% of his cases. While Traube and pathologists generally claim that it acts by contraction of the arterioles they do not explain this on a physiological basis. The action of alcohol on the liver is, however, well known as clinical experience and experimental research have demonstrated. This action probably interferes with the proper hepatic function and results in a faulty protein metabolism, in other words, suboxidation of the nitrogen compounds. Huchard in his excellent book "Diseases of the heart and vessels" claimed this years ago, but it has never been generally accepted. In a series of nitrogen partitions of the urine from alcoholic subjects I have never failed in the demonstration of insufficient oxidation.

Excessive quantity of food, excessive drinking of coffee or tea, excessive meat diet, excessive smoking and sedentary habit, cited as causes of arteriosclerosis, are also the very conditions which produce gastric, hepatic and intestinal disturbances and usually one or both of two types, as clinical experience amply demonstrates. Either

an intestinal toxemia, the faulty metabolism being due to bacterial action, or a fault in hepatic function which has insufficient oxidation as a result, or both. Experience also demonstrates that these faults may exist in these subjects without any disagreeable manifestations whatever, and are found perchance on careful examination of the urine. It is surprising what a large proportion of specimens of urine which are sent to the laboratory for examination because life insurance has been refused on account of traces of albumin, will show evidences of faulty metabolism. These people are in apparent good health, between 30 and 40 years of age, in comfortable circumstances, with a clean life insurance record previously, and for one or more of many reasons, there is suboxidation and the resulting toxic products are beginning to produce arteriosclerotic changes. The large number of examples of this kind that have come to my notice has firmly established this belief.

Unusual mental activity, worry, wear and tear of business or professional life, sexual excess and some of the infectious diseases such as small-pox, typhoid, etc., are often quoted as causes of arteriosclerosis. There are no indisputable statistics on record to my knowledge to support this claim or to indicate the manner in which these causes act. If we admit them as causes it is as simple to explain their action by the production of faulty body chemistry as it is by direct action on the vessel wall or its nutrition.

Diabetes, obesity, excessive muscular exercise, gout, chronic rheumatism and heredity form another group of quoted causes. The suboxidation in diabetes is well known. In many cases, however, the diabetes is the secondary and not the primary condition. It is produced by arteriosclerotic changes in the pancreas and in the central nervous system. In the obese, the fatty infiltration and the stasis in the portal vein, and in the severely anemic, the defective oxygen carrying power, would explain the faulty metabolism. While excessive muscular exercise does increase blood pressure it is far from proved that it is really a cause of arteriosclerosis. Experience does not show an undue number of cases of premature arteriosclerosis in professional athletes or laborers doing hard work in foundries, quite the contrary. Should it be acknowledged as a cause, however, the research work described by Lee would form an ample basis for the belief that it causes decided changes in metabol-

ism. The gouty diathesis is undoubtedly a frequent cause of arteriosclerosis. In this condition a fault in protein metabolism certainly exists though it is not constant in type or necessarily in direct proportion to the pathological or clinical manifestations—neither is the change in the arteries. The same may be said of chronic rheumatism. If the faulty metabolism of gout is hereditary why not the faulty metabolism which produces arteriosclerosis.

There remains a consideration of the three most frequently mentioned causes of arteriosclerosis, namely old age, syphilis and lead poisoning.

Concerning old age, Huchard mentioned years ago that in old persons the blood is not properly oxidized in the lungs, that it is more venous in character and that this causes intoxication due to the accumulation of products of faulty nitrogen metabolism in the blood, which evidences can also be found in the urine. This again supports my belief.

Syphilis is certainly claimed to be the most frequent cause of arteriosclerosis. It without doubt often produces changes in the blood vessels, but Schrötter, Luck and many modern men claim this is a distinct lesion, a syphilitic endarteritis which can be differentiated from an arteriosclerosis, just as a tuberculous endarteritis can be differentiated. It is not within my province to enter into the pathology or the disputed points, but the fact that faulty body chemistry can as a rule be demonstrated in arteriosclerosis and not in the syphilitic cases would seem an additional argument in favor of the modern view.

Concerning the changes produced in the arteries by chronic lead poisoning, Schrötter quotes Kolisko as saying that while they have much in common with arteriosclerosis, the minute changes are not the same. The cases show distinct gouty deposits however, particularly in the big toe. Osler, Roberts and Ralfe all mention the faulty nitrogen metabolism in the urine as well, though I lack actual experience, I have no doubt but that this can be demonstrated.

If we are allowed to exclude syphilis from the list of causes it has thus not been difficult to show that all other conditions which are said to produce arteriosclerosis are direct causes of deficient body oxidation and thus cause the production of toxic products of incomplete metabolism.

Is there sufficient evidence to prove that this toxic influence of products of incomplete metabolism can produce arteriosclerotic changes?

Arteriosclerosis is a pathological condition the early stages of which produce no symptoms, and it often cannot be recognized at this time even if suspected. Unless there is some renal involvement, the urine of these patients is not subjected to close scrutiny at regular intervals, and on this account it has not been possible to select from laboratory records a sufficient number of cases in which the urine has been followed for a period of years to prove the existence of evidences of faulty metabolism. If, however, we are willing to admit that the contracting kidney is but a phase of the general condition under consideration, then I can present the following experiences. I have examined my records with the idea of tracing a number of cases of contracting kidney which presented evidences of faulty metabolism in the urine and from which specimens were closely examined at longer or shorter intervals over periods of at least five years, some of these if possible prior to the development of indications of an actual pathological lesion of the kidney. In one case 35 urine examinations were made during a period of 19 years. The early records, during the first nine years, show nothing abnormal, the examinations having been made as a matter of precaution before anesthesia and before application for life insurance. During the tenth year of this period with some symptoms referable to the gastro-intestinal tract, the urine contained a pronounced excess of indican and a relative excess of ethereal sulphates, but no fault in the nitrogen partition as we used to make it at that time. During the following two years three specimens were examined with the same result. For the following five years the urine presented evidences of a functional albuminuria; the indications of faulty metabolism and the clinical manifestations of an arteriosclerosis were noted. At this time the classical urinary picture of a contracting kidney was first observed—large daily amount, pale color, low gravity, deficient solids, traces of albumin and few casts, with the same evidences of faulty metabolism mentioned. Since then the patient has given his condition the strict attention it should have had at an earlier date. Proper climate, diet and mode of life have remedied the intestinal toxemia, but his arteriosclerotic changes and nephritis continue de-

spite his winters in Egypt, summers in the hills about Geneva and his whole attention given to the task of getting well.

In another case observed over a period of 15 years the urine was normal for two years, presented evidences of faulty nitrogen metabolism without albuminuria for ten years with functional albuminuria for two years and classical urine and symptoms of contracting kidney and arteriosclerosis for one year. Death then resulted from apoplexy.

Four cases followed for periods of ten years presented evidences of faulty metabolism at the time of the first examination. Three of these showed faulty nitrogen partitions and one a faulty sulphate partition. These patients all had their metabolism faulty for a considerable period prior to the development of the renal lesion, and have unfortunately passed from observation.

Twenty-two cases were observed for five years. In all these a functional albuminuria and evidences of faulty metabolism were present at the time of the first examination. Faulty nitrogen partition was noted in twelve, faulty sulphate partition in seven, and both faults combined in three. All these cases have developed the classical urinary picture of a contracting kidney. While there were no direct evidences of a general arteriosclerosis in any, as far as could be learned, is it not reasonable to suppose that the hypertension, the accentuated second heart sound and the changes visible by ophthalmoscope may have in part been due to arteriosclerotic lesions other than in the kidney?

This clinical experience would seem to justify the suspicion of the toxic origin of arteriosclerosis, or more properly stated, would corroborate the opinions of most all modern writers on the subject. In this connection I beg consideration of the interesting research of Ditman who proved experimentally that nephritis is caused by these metabolic faults. He concludes that many chemical substances which by complete oxidation are converted into innocuous products, may by incomplete oxidation be decomposed into products of great toxicity. Among the most toxic substances formed in the body are the incompletely oxidized nitrogenous products of protein decomposition.

It would take me too far afield and into disputed questions to consider the details of the faults in metabolism which are believed

to be at work in these cases. Nor will I go into a minute considera-
tion of the changes from the normal observed in the urine. In gen-
eral it may be said as previously stated, that these changes in the
urine belong to one of two types which sometimes occur together.
Faults in the ratio of mineral and ethereal sulphates are frequently
accompanied by an excess of indican and are referable to disturbed
intestinal metabolism, or an intestinal toxemia. Faults in the nitrogen
partition may or may not be accompanied by evidences of an acidosis
and are probably referable to disturbed hepatic function, or if you
wish to a hepatotoxemia. It is generally found that these dis-
turbances of metabolism, if not transient and due to an intercurrent
disorder, are cyclic or constant though fluctuating in degree. When
firmly established it is by no means a simple matter to remedy them.
If they are to be eliminated it is generally necessary to make perma-
nent changes in the patient's mode of life and habits and sometimes
in occupation. It is not sufficient to have them under observation
during the relatively short time of subjective ailment but they must
generally be guided for months and years. It is thus apparent why
comparatively few cases of this sort are really permanently relieved.
It is evident that the cause usually exists for a considerable period
before it produces arteriosclerotic changes, and if these are present
their course is favorably influenced though not necessarily checked
by the relief of the toxemia. The absence of faults in body chem-
istry in cases of established arteriosclerosis does not indicate that
these faults did not cause the condition.

In considering the diagnosis of arteriosclerosis the cases may be
divided into two stages as suggested by R. Clark (L. I. Med. Jour.
1909, No. 9): the toxemic stage and the later stage.

Toxemic Stage: It is my firm belief that the disturbances in
metabolism precede the actual development of arteriosclerotic
changes for years in most cases. During this early period the faults
in the urine may be the only signs obtainable or these may be asso-
ciated with symptoms referable to the toxemia rather than to any
changes in the caliber of the arterioles or in the heart action. Sooner
or later there is increase in arterial pressure, an increase in the heart
action with slightly accentuated second sound, and contraction of
the small arteries as can often be demonstrated by the ophthalmo-
scope. These changes are usually associated with indefinite clinical

symptoms. A certain amount of lassitude, loss of pleasure in doing work, slight dyspnea on exertion, occasional headaches and neuralgic pains, occasional vertigo, occasional insomnia and a pallor of the skin not due to anemia as the blood count will be found normal. There may be slight functional albuminuria though often it is absent. At this time there are no structural changes in the vessels and complete relief is still possible. This, however, usually demands unwelcome sacrifices in the patient's business or professional activity and thus in the social enjoyment of his family. He usually claims that the proposed regime is out of the question on this account and goes on with his toxemia into the later stages of his arteriosclerosis. When actual lesions become established it is too late to remedy the condition though many symptoms are relieved by the abatement of the toxemia. This explains why so many well-to-do and comparatively young men are ready to do anything to regain health at a time when this is no longer possible. Undoubtedly the untiring ambition for success without regard for personal health and his spurring on by the extravagances of the family seeking social prominence is at the bottom of many a case of premature arteriosclerosis in the paterfamilias.

Later Stages: I will not burden you with a rehearsal of the well-known clinical symptoms which are the result of the pathological changes of arteriosclerosis. Eichberg, quoted by Clark sums it up by saying that a diseased vessel means a diseased action of an organ which will later also show organic changes. The symptoms will depend on the type of the lesion, that is, on the lack of function of the organs particularly involved. The diagnosis also offers no difficulty and the cardinal signs in the heart, the kidney, the retina and in the palpable blood vessels are so well known that they scarcely bear repetition.

The blood pressure as determined by modern instruments has had an unusual amount of attention during the last few years. Clark properly calls attention to the fact that the tonometer measures not only the internal blood pressure but that the readings also include the arterial wall resistance. Greater pressure with less resistance may give the same reading as less pressure with greater resistance. Readings by the oscillatory method are more accurate than those by obliteration of the pulse and are to be recommended. Most cases

show hypertension which is usually in direct proportion to the severity of the condition. The increased pressure is nature's way to overcome the peripheral resistance, and is a protection against disaster. It may at times be desirable to modify this increase but reducing it to within normal limits, if possible at all, may produce serious consequences. A normal or reduced pressure which develops after the existence of high pressure usually indicates myocardial changes, the result of serious involvement of the coronary arteries.

Sphygmographic tracings and changes in the viscosity of the blood show interesting features but are scarcely of sufficient import as yet to justify burdening the clinician with the necessary apparatus for the determinations.

It is to be hoped that closer attention to faulty body chemistry, the recognition of its serious import and that radical measures are often necessary for its relief, may be a means of preventing the premature development of arteriosclerosis, particularly in the pillars of our nation, the overworked, self-sacrificing mental laborer.

THE SIGNIFICANCE OF ABDOMINAL PAIN IN INFANTS AND CHILDREN

By LEGRAND KERR

Professor of Diseases of Children, Brooklyn Post-Graduate Medical School;
Visiting Pediatrist, Methodist Episcopal (Seney) Hospital; Williamsburg
Hospital and Swedish Hospital; Consulting Pediatrist, E. N. Y.
Dispensary

Brooklyn-New York

It requires considerable judgment to give abdominal pain in the child its proper interpretation. In the examination of the older child it is necessary to determine at the outset whether or not the pain is limited to the abdominal wall, or if it is associated with one of the underlying viscera.

While it is not very common, at the same time it is not infrequent that we find the wall of the abdomen hyperesthesic. The re-

sult is that in the examination to determine the site of any abdominal pain the inner aspect of the thighs should be first examined. In doing this we gain two things: first, we do not directly approach the site of expressed pain, and we thereby gain the child's confidence somewhat; and, second, hyperesthesia of the abdominal wall is almost invariably associated with a similar condition of the inner aspect of the thighs, and absence in this situation would lead one to suspect its absence in the abdomen.

When such hyperesthesia is present, it is spread over a somewhat considerable area, extending well up over the chest. If a fold of the skin is grasped and firm pressure is made upon it, the pain is increased in proportion to the degree of pressure. Hyperesthesia of the skin of the abdomen is fairly constantly associated with typhoid fever and meningitis; less frequently with malaria, the other acute infectious diseases, and anemia.

Sometimes we find that the pain is simply muscular, and the causes of such a condition are usually exposure to cold, straining from violent coughing, unusual exercises involving the abdominal musculature, and in rare instances rheumatism. In all such cases the pain is localized quite strictly to the recti muscles if the active cause is a mild one.

However, if the condition is of the unusual severe type, there may be vomiting, some fever, and rather widespread abdominal pain, which compels the child to assume one position and remain in it. The whole course of the severest attacks is not over forty-eight hours. In nearly every instance exercise is the cause of the severe attacks.

If the pain is due to inflammation of the peritoneum, it is by far the most acute abdominal pain which is observed. It is continuous, although this fact may be overlooked, owing to the acute exacerbations which occur and which are due to peristalsis. Associated with the pain there is tension of the abdominal wall, the slightest pressure increases the pain markedly, and there are the other evidences of inflammation of the peritoneum, as tympanites, constipation, etc.

INTESTINAL COLIC

This is one of the most frequent causes of pain and crying in infants. They not only cry, but usually there is a succession of

shrieks, which is associated with throwing about of the legs, until relief comes with the expulsion of flatus. Generally such attacks are associated with constipation, but this is not always the case; they are not infrequently associated with diarrhea. An important aid in the rapid recognition of this condition is the fact of the quick relief which is afforded by the use of a warm enema.

By far the chief seat of conditions which result in attacks of intestinal colic is the stomach, and failure of perfect digestion in that organ is almost certain to be followed by colic. Intestinal parasites are a less frequent cause, as is also loss of tone of the muscular walls of the intestines.

The abdomen is generally much distended with gas, and if there is an absence of this feature, the search for the cause should be most thorough, and it ought not to be accepted as a simple intestinal colic until every other possible cause is excluded. It is characteristic of the condition that after the subsidence of the attack there is an entire absence of all ill effects.

Intestinal colic is most frequent during the first six months of life, and irrespective of the fact as to whether the infant is breast-fed or bottle-fed. Perhaps it would be no exaggeration to say that fully three-quarters of all the cases are due to the proteid element in the food.

In the diagnosis of the condition one must be certain that the attacks are acute, for a chronic state of flatulence in an infant may be associated with more or less wasting and slight fever, and would suggest the probability of a beginning tuberculous peritonitis. If there are elevation of the evening temperature and a well defined tenderness of the abdomen, with various points at which there is evident thickening, then the diagnosis of tuberculous peritonitis is almost certain.

APPENDICITIS

There are three cardinal symptoms of this disease—localized abdominal pain, localized abdominal tenderness, and rigidity of the right recti muscles.

Of these three, the first is the least important in diagnosis, for it may be slight. Usually, however, pain is severe and intermittent, so that the child complains as of colic. The child (unless of much

intelligence and over six or seven years of age) exhibits its usual inability to definitely locate the pain, and in most instances when it is somewhat definitely located, it is referred to the umbilicus.

Tenderness is a much more constant feature and is seldom, if ever, absent. By palpation it is located in the right inguinal region, but the whole abdomen may be hyperesthesic. Even in this case there is more acute tenderness in the right inguinal region.

Muscular rigidity is the last mentioned and yet the most valuable sign of the three, for it is never wanting in some degree. It is particularly marked in the lower quadrant on the right side.

Rise of temperature may be absent or moderate, or there may be considerable pyrexia, the usual ranges being between 100 deg. and 104 deg. F. It must be remembered, however, that the height of the fever is no indication of the severity of the disease. Associated with the fever there is generally more or less vomiting, which is usually repeated, and may persist until it becomes first bilious, then fecal (the latter being very rare).

In contrast to the usually low temperature, the pulse is characteristically rapid and is thin and thready. Thirst, which is marked, and constipation, which is obstinate, are the rule, although the attack may at times be preceded by diarrhea. The child often assumes a dorsal position with the right limb flexed at the hip and knee. The termination of the disease is by resolution, the development of general peritonitis, or the formation of an abscess.

An attack of appendicitis is usually sudden, and the acute catarrhal type may subside within forty-eight hours and fail to be recognized. However, if all cases of supposed acute attacks of indigestion were examined after a subsidence of all symptoms, in many instances a careful palpation would reveal a slight thickening and induration about the region of the appendix, and the true nature of the attacks would thus be discovered.

It is not unusual for several such attacks to occur within a few months or years, and in every instance be attributed to some error in diet. The value in recognizing such attacks is in advising appropriate measures for the prevention of a severe suppurative form of the disease, which is liable to appear at any time, either during the course of one of the mild attacks or directly after it.

If an abscess is formed, then this is recognized by the boggy

feel of the tumor and exploration by the fingers through the rectum.

Symptoms which are strongly suggestive of an abscess are fluctuating fever (with the history of chills in older children), a persistently coated and furred tongue, and increasing prostration.

The value of a blood count is doubtful in children. Such a count requires the most careful technic, and to avoid error there must be several counts daily, and if the pus become encysted, the count is of lessened value. For practical general work it is useless.

When an abscess has developed, the course of such is very indefinite, sometimes persisting with symptoms of a mild septicemia for weeks. It is very rare that severe symptoms are persistent for a considerable period. Peritonitis sometimes will develop upon the third or fourth day, and usually collapse and death quickly follow in such cases.

The symptoms which are most suggestive of such an extension are an otherwise unexplained rise in the temperature, abdominal distension, rather sudden subsidence of the localized pain, to be followed shortly by generalized abdominal pain, tympanites, and collapse.

The diagnosis must be made first from acute indigestion, which usually exhibits a higher temperature and much more rapid subsidence of the acute symptoms, and which exhibits no thickening in the region of the appendix when palpation is later practised.

From volvulus and intussusception the diagnosis is usually readily made, for in these conditions there is absence of the temperature rise, and there is present the passage of bloody stools or mucus discharges from the rectum which are accompanied with tenesmus and the development of a left sided tumor, as a rule. The tympanites may be so early in appearance and so marked in degree that the tumor cannot be made out.

Nephritic colic may simulate appendicitis for a time, but the pain is limited to the lumbar region, and instead of increasing is decreased by pressure. The pain generally radiates along the course of the ureter and is relieved to an extent by urination. There is no muscular rigidity of the abdomen. Slight fever may be present, but this is unusual.

Hepatic colic sometimes has a most acute onset with severe pain

and vomiting and may simulate appendicitis, but the pain is more severe and persistent in character and confined mostly to the lower portion of the right side of the chest. Typhoid fever is sometimes hard to differentiate, particularly when the history is vague and the symptoms are not pronounced. It is then necessary to delay judgment or apply the Widal test.

Pneumonia of the lower lobe may have an onset much like appendicitis, and with a similar abdominal pain, which is due to involvement of the lower dorsal nerves, so that it is necessary to carefully examine the chest to distinguish the real disease. The symptoms which would suggest a lung condition are: sudden rise of temperature to 103 deg. F. or over and its maintenance above that point, increased respirations (out of proportion to pulse), relaxed abdominal muscles, and cough.

ACUTE PERITONITIS

The disease is usually easy to recognize on account of the well defined symptoms, chief of which is severe and diffused abdominal pain. This pain is increased by the slightest degree of pressure, so that the motion of the child, coughing, sneezing, or jarring the bed will increase the suffering greatly. The result is that the child remains immobile upon the back with the legs drawn up to relieve the tension on the abdominal muscles.

The onset is nearly always quite abrupt, with vomiting and rise of temperature, the vomiting being usually present only at the onset, and the temperature reaching 103 deg. or 105 deg. F. The most constant feature of the disease is the swollen and tympanitic abdomen. The distension is diffuse in nearly every instance, but rarely it may not be so regular. Constipation is the rule.

Outside of the local symptoms, there is evidence, from the general ones, of the seriousness of the disease. From the start prostration is marked and the pulse is weak and small. The pain is evidenced by the drawn and pinched features, and the extremities are in some cases cold and clammy. The mind is generally clear. When the vomiting persists, it is usually an indication that collapse will quickly supervene.

In childhood, the course of the disease is usually rapid (three or four days), but, if of a moderate severity, the course may be ten

days, and after that time there is generally a localization of the proc-
ess with good chances for recovery. If peritoneal abscess develops,
then we have the added symptoms of hectic temperature, chills,
sweating, and local signs of tumor.

In young infants the disease is not so well defined and therefore
is harder to distinguish. In them it usually proves fatal within the
first seventy-two hours, and with symptoms so obscure that often
the diagnosis is not made. The pain is evidenced by the restlessness,
the constant crying, and fretfulness. In most cases the diagnosis is
not made unless there has been a clear history of some etiologic
factor. In the newly born this might be by direct infection through
the umbilical vessels; in older infants by traumatism, severe burns,
or as a secondary condition to appendicitis, hepatic abscess, acute
intestinal obstruction, pleuritis, gonorrheal vulvovaginitis, pneu-
monia, or scarlet fever.

LOBAR PNEUMONIA

Lobar pneumonia is a very common cause of acute abdominal
pain in children, and one that is readily overlooked. It is a safe
guide that no matter what the acuteness of the abdominal pain or
even its location, if there is a *marked* disproportion between the pulse
and the respirations, that pneumonia should at once be suspected as
its cause. It has been my rather common experience to have children
sent to some one of my hospital services for operation for appen-
dicitis and upon examination to find that the appendix was appar-
ently normal, but that the pain in the abdomen was entirely de-
pendent upon a right sided lobar pneumonia. So frequently has this
occurred that it should be prominent in the mind of every clinician
who treats children.

CATARRH OF THE SMALL INTESTINE

This may produce colic, and if so, the pain usually immediately
precedes a diarrheal stool and relief is coincident with the movement.

CATARRH OF THE LARGE INTESTINE

This is accompanied by frequent colicky pains which are asso-
ciated with tenesmus and stools that are composed mostly of mucus.

INTUSSUSCEPTION

Intussusception exhibits a most intense abdominal pain, and the onset is sudden with repeated, violent vomiting. While the pain may be apparently paroxysmal, yet by careful examination we find it to be continuous with distinct paroxysmal increases and accompanied by much straining and screaming. Prostration is always extreme. At first there is usually the passage of small quantities of blood and mucus or at times these may be passed with small quantities of feces. Other cases show an entire absence of any discharge from the rectum from the beginning.

The most characteristic feature is the formation of a smooth, slightly movable, very tender, cylindrical tumor, palpable through the abdominal wall and usually felt above the umbilicus, extending toward the right flank.

INTESTINAL PARASITES

Intestinal parasites may be suspected as the cause of colic if the pain occurs early in the day upon an empty stomach, but the only positive diagnosis is made by their removal resulting in an entire subsidence of all the symptoms.

SPINAL CARIES

The pain in spinal caries is usually worse at night and is referred to those parts of the abdomen which are the site of the distribution of the nerves that are nearest the site of the spinal lesion.

NEPHRITIC COLIC

In nephritic colic there is usually a distinct family history or history of previous attacks, and it follows exercise as a rule.

STRANGULATED HERNIA

Strangulated hernia is not difficult of detection, for the local signs are usually well marked leaving little chance of error. The pain is similar to that of other intestinal obstructive conditions.

DIFFERENTIAL DIAGNOSIS OF THE SPASMODIC RESPIRATORY AFFECTIONS IN EARLY LIFE

By GODFREY R. PISEK

Professor of Diseases of Children, University of Vermont; Adj. Professor of Diseases of Children and Attending Physician, New York Post-Graduate Medical School and Hospital; Attending Physician to the Darrach Home for Children

New York

The German pediatrists have placed in the spasmophilic group, laryngospasm, tetany and eclampsia, but the writer believes that spasmodic laryngitis, spasmodic tracheitis, and bronchial asthma in early life may be rightly placed in this group. These also are the result directly or indirectly of exaggerated irritability on the part of the nervous system. More than that they exhibit the same hereditary factors, and in many instances there is a direct homologous transmission from the parent to the child. They are most often found in rachitic children, or at least in those that have suffered from disturbed chronic metabolic processes during their period of growth and development. In this class of cases which all have an unstable nervous equilibrium, the peripheral nerves are liable to greater irritation from minor causes, as their power of inhibition is correspondingly poorly developed. Thus it is, for example, that bronchial asthma may result from purely local causes, as adenoids or enlarged bronchial lymph nodes.

Laryngospasm while not a common affection is not infrequently seen in infancy. It is a distinct type and should not be confused with congenital laryngeal stridor, which is an extremely rare anatomic condition. Laryngospasm is characterized by spasmodic attacks affecting the glottis and the neighboring laryngeal muscles. Its association with rachitis, the fact that it is almost a pure neurosis, that latent manifestations of tetany are often demonstrable, place it clearly in the spasmophile group, as was first shown by Loos and Escherich. This condition is too often confounded with spasmodic croup, tracheal spasm or the spasmodic condition invariably found in pertussis. In laryngospasm we have a prolonged audible inspiration, accompanied by a sinking of the larynx, with an inspiratory crow or stridor which has provoked into activity all the accessory

muscles of respiration. The expiration which follows with a rais-
ing of the larynx, is gentle and quiet. We can readily distinguish
this condition from a tracheal spasm, as in this affection there is an
expiratory stridor with restricted movements of the larynx. The
position of the head also is of assistance as it is held forward in
tracheal spasm, and not backward as in laryngeal spasm.

Congenital laryngeal stridor on the other hand is distinguished
by the fact that it occurs in the first few weeks of life in otherwise
healthy children. The dyspnea is not marked in degree while the
stridor is almost constantly heard. Occasionally edema of the
larynx or a retro-pharyngeal abscess causing dyspnea through me-
chanical action must be distinguished from laryngospasm. The ab-
scess will make itself apparent when a suitable tongue depressor is
used, and the finger, inserted into the mouth, will feel a doughy
fluctuating mass.

Edema of the glottis is not so readily distinguished unless the
examiner has accustomed himself to digital exploration in this region
and can appreciate the normal from the pathologic glottis.

He must remember that the infantile larynx differs quite con-
siderably in its appearance and size from the adult type. The
epiglottis is elevated only slightly and it is gutter-shaped, so that the
entrance is easily occluded. Examination with the mirror is well
nigh impossible in young children, although the bronchoscope can
be used in expert hands, if a general anesthetic is given.

Spasmodic laryngitis or pseudo-croup is included in this discus-
sion, because its symptoms are mainly produced by spasm; a spasm
principally of the adductor muscles. The sufferers who so often
have recurrent attacks belong to, or have at some time belonged to
the spasmophile class of infants. What I have just said of spas-
mophilic laryngitis holds equally true for those patients who have
bronchial asthma, except that the latter often have an added burden
as a part of their diathesis, namely chronic eczema. The symptoms
of spasmodic laryngitis are familiar enough, but the affection is
sometimes confused with laryngismus stridulus or laryngospasm. The
distinguishing characteristics are the absence of any fever, cough or
rhinitis in laryngospasm, and the fact that the attacks are but mo-
mentary, recurring much more frequently than in spasmodic
laryngitis.

The age of the patient is also a help in making a diagnosis, since spasmodic laryngitis rarely occurs under two, and laryngismus stridulus is most frequently found in children under two years of age. If the question should arise as to a diphtheritic croup, the suddenness of the onset, usually at night, the spasmodic character of the dyspnea, with only a mild grade of inflammation, in which remissions occur, will be of assistance in the absence of the laboratory test.

The spasm of non-diphtheritic laryngitis can be relieved by a momentary inhalation of chloroform, but it persists if there is a membrane present. Should the condition be confounded with a possible pertussis, the spasmodic expirations, followed by a series of whooping inspirations at the end of which some mucus is expelled should distinguish the affections. In the early stages, this characteristic may not obtain, and then we may be materially helped by a leucocyte count, for in pertussis the white cells are three times as numerous as in the normal child.

Finally, we must consider in this connection bronchial asthma, which occurs in infants and children more frequently than we would infer from the literature. The children of asthmatic or so-called rheumatic parents are particularly predisposed to this spasmophilic tendency, and if there is present any focus of irritation in the upper respiratory tract as an adenoid vegetation, the attacks are more frequent and severe.

The attacks of asthma may be confused with a diffuse bronchopneumonia or a cardiac asthma. The absence of temperature and the presence of acute pulmonary emphysema with expiratory dyspnea and whistling râles will rule out a pneumonia; on the other hand in cardiac asthma we have dyspnea which is both inspiratory and expiratory with no emphysema. In laryngeal diphtheria, on the other hand, inspiratory dyspnea is predominant, and there are no sibilant and sonorous râles.

It is evident, therefore, that a careful physical examination is necessary to correctly identify these affections, close study being particularly directed to the character of the respirations.

The diagnosis once made, temporary measures can be instituted for relief, but the underlying spasmophilic condition must be eradicated before a complete cure is made.

RECTAL PALPATION IN THE DIAGNOSIS OF ACUTE INTRA-ABDOMINAL DISEASE

By GORDON K. DICKINSON

Surgeon, City and Christ Hospitals; Consulting Surgeon, Bayonne Hospital

Jersey City, N. J.

Palpation per rectum as a diagnostic method in acute intra-abdominal conditions has not received full attention from the profession. To many, laparotomy seems so simple and safe that continued efforts in differential diagnosis are not as frequently carried
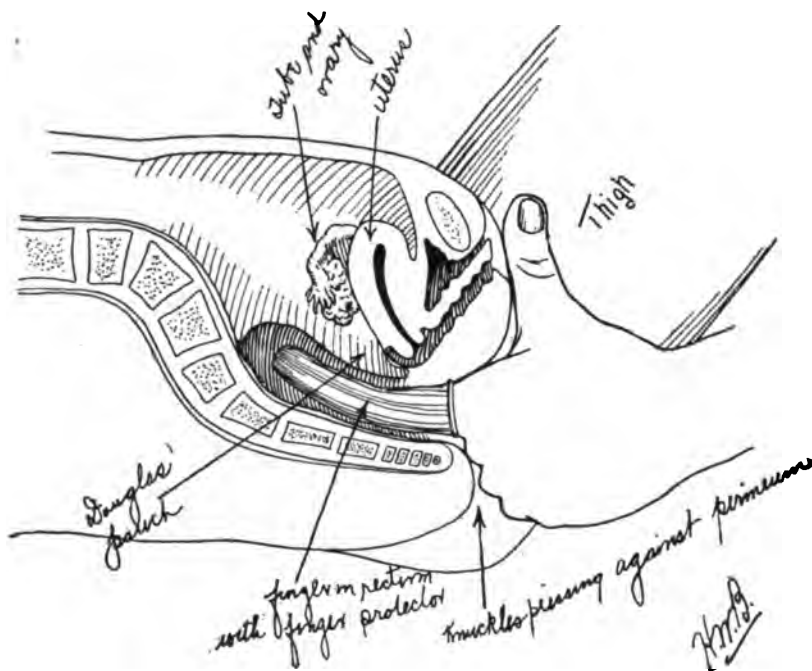
FIG. I. SHOWING RANGE OF RECTAL PALPATION IN RELATION TO PELVIC VISCERA

out as they should be. Many lessons may be learned from the old-time clinicians who did not possess our laboratories or operating-rooms and could not fall back on them for diagnosis. Being a reser-

voir of filth is also a reason why the rectum has not been more pop-
ularly used as a place to palpate the lower abdomen. He is a well-
trained man, and one who is least apt to err, who includes rectal pal-
pation in his routine of examination. The distance from the anus
to the fold of peritoneum varies from three to four and a half inches
in the adult, being somewhat lower down in the female than in the
male, thus enabling a finger of ordinary length to reach a fair dis-
tance up into the pelvis for prehension. The position of the patient
in rectal palpation is important. For complete exploration it would
be well to examine the patient not only when he is on his back, but
also in the almost-forgotten Sims' position. In the latter, it is pos-
sible to push in the soft parts and carry the finger up an inch or more
further than when the patient is recumbent. For reasons of cleanli-
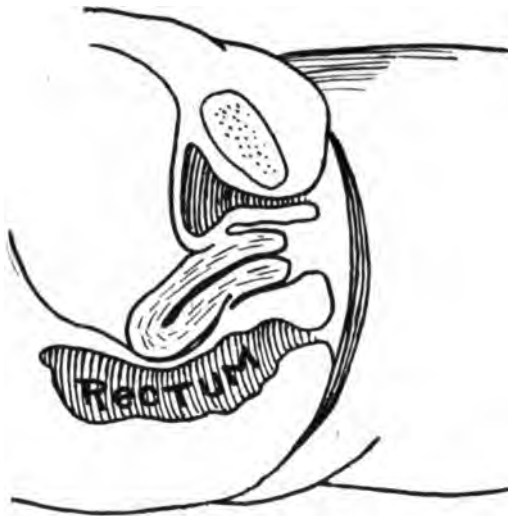
FIG. 2. PROXIMITY OF THE RETRODEVIATED UTERUS TO
THE RECTUM AND ANAL CANAL

ness and surgical precaution it is wise to cover the finger with a thin
well-anointed rubber stall, so there may be no resistance on the part
of the patient.

The diseases discoverable will give evidence either through
their direct palpation or structural lesion of the rectum itself. In

pyogenic peritonitis (so often associated with appendicitis), in accumulations of pyogenic fluid in the pelvic pouch, or of irritating fluids from rupture of gastric or duodenal ulcer, we will have hypersensitiveness with fluctuation, indicative of regional peritonitis and fluid accumulation. Where we have history of shock, acute anemia, associated with fluid in the abdomen, not quite so liquid to the touch, we have reason to suspect hemorrhage. Where irritating fluids inducing inflammation have remained in the cul-de-sac for several days, inflammation may be transferred in and through the coats of the rectum, inducing degenerations with softening, and sometimes perforation. In the less acute inflammatory processes, instead of proliferation of the tissues, which produce pus, we may have a proliferation with organization, leading to hyperplasia, the hyperplased portions quickly becoming attached to contiguous parts, forming inflammatory tumors of varying size, some well vascularized, others not. According to their density and to the extent of their adhesions, as detected by touch through the rectum, a correct diagnosis will be derived.

Pressure on the rectum and interference with its circulation will lead to a softening of the gut and a regional proctitis, characterized by the discharge of blood and mucus. Care must be taken in examining and diagnosing these cases not to consider pressure and proctitis as malignancy. Bimanual palpation, the right hand on the abdomen and the forefinger of the left in rectum, will frequently enable the diagnostician to nicely map out the lesion. Careful consideration of the history in conjunction with bimanual palpation will allow the experienced diagnostician to discover the co-existence of several intra-abdominal lesions of different types. Retroflexions of the uterus, prolapsed adnexa, tumors of the ovary, occlusion cysts of the tubes, ectopics, diseased appendices over the iliopectineal line, diverticulitis, and even prolapsed kidney all admit of palpation through the rectum. In cases of ascites we may at times determine papillomatous ovaries in the female where the clinical history is suggestive of hepatic cirrhosis.

In diagnostics the routinist in examination will sometimes outstrip the more clever but less careful examiner; hence rectal palpation, even in the female, should be a routine procedure in abdominal diagnostics.

THE DIAGNOSIS OF FIBROSIS UTERI

By SAMUEL W. BANDLER

Adjunct Professor of Gynecology, New York Post-Graduate Medical School and Hospital

New York

Fibrosis uteri signifies an evenly enlarged, regularly outlined, hard uterus, surrounded by peri-uterine tissue in a state of congestion and hyperemia; the uterine wall contains muscle fibres of poor contractile quality, the inter-cellular elastic connective tissue being replaced to a great extent by non-elastic fibrous connective tissue; the vessels about the uterus and the capillaries in the uterus showing a marked deficiency of contractile power. As a result, the uterus is able to but feebly resist the pre-menstrual congestion, so that menstruation is frequently early. The uterus is unable to thoroughly contract and limit the duration of the menstrual flow, hence menstruation is profuse and prolonged.

Fibrosis uteri is practically unknown in the nulliparous woman. It is usually present in women who have had several children, although it is not unknown in uniparous women.

Its etiology is to be traced back to incomplete involution after labor or abortion. This factor plus pelvic congestion and uterine congestion results in a large hard non-elastic organ.

Fibrosis uteri is almost exclusively found in well built, broad shouldered, solid women, who seem to bear with a remarkable resistance continued loss of blood, month after month, without visible evidences of harm; yet, the effect on the cardiac muscle is certainly an injurious one. These patients are found to have well developed, well functionating and generally large ovaries. The condition may occur in the late thirties, in the early forties, and frequently continues in the late forties and fifties.

To state the matter in a few words the climacterium which should normally end in the menopause is the usual period for the development of this condition. The enlarged uterus naturally enters more slowly into the stage of characteristic and senile atrophy for two reasons.

1. Because of its size and structure.

2. Because of the presence of plump ovaries which are produc-
ing ovarian secretion and therefore causing the more or less regular
and rhythmic uterine hyperemia known as the pre-menstrual and
menstrual congestion.

The differential diagnosis of this condition from fibroids of the
uterus, from cervical or uterine polyps, from overgrown en-
dometrium, from degenerating bleeding neoplasms rests on several
factors. The uterus is considerably enlarged, the enlargement in-
cluding the cervix as well as the corpus uteri. There is a history of
one or more labors and oftentimes of one or more abortions. The
patients are stout, well built; there is no peri-uterine involvement,
the lining of the uterus is smooth and even; a bimanual examination
shows the uterus to be smooth, firm and hard with the cavity of the
uterus enlarged. Ergot in its various forms exerts almost no influ-
ence in limiting the bleeding. Stypticin (cotarnine hydrochloride)
rarely has a favorable effect. In the natural course of events a
curettage is selected for therapeutic reasons.

Curetting shows an endometrium rarely hyperplastic no matter
how thoroughly the operation is done. A thorough use of atmocausis
after the curettage causes a diminution in the size of the uterus. If
a thorough curettage, especially one followed by atmocausis, a pro-
longed rest in bed, continued administration of ergotol in large
doses, daily administration of two or more short hot douches of a
temperature of 112 to 115 degrees is followed by no improvement
in the menorrhagia, by no diminution in the size of uterus, or results
only in temporary improvement without diminution in the size of
the uterus, or by a temporary improvement, followed by a recurrence
of the menorrhagia, the diagnosis of fibrosis uteri is made positive.

It is needless to say that the curettage, though carried out for
its curative effect, is of primary importance in putting the en-
dometrium into our hands, and this should be subjected to a thor-
ough microscopical examination for the purpose of excluding the
presence of polyps or malignant neoplasms.

The only condition which may confront us after these tests have
been made is a fibroid situated in the structure of the uterus close
to the endometrium and yet producing no irregularity in the uterine
outline.

The definite diagnosis of fibrosis uteri in many cases relieves

the mind of the physician of the ever present worry as to the existence of a malignant growth. The future care of such cases demands the use of douches, intra-uterine electricity, the internal administration of ergotol, ergotin, stypticin, hydrastin, and in some instances thyroid extract.

While this condition does not menace the life of the patient, it interferes to a very marked degree with the patient's mode of life, with the patient's comfort and with her ability to carry out her social and domestic obligations. Although the condition, as just stated, does not menace the patient's life, it nevertheless constitutes one of the most annoying diseases of women at or about the climacteric age.

These factors bring the disease, more especially after an unsuccessful attempt at cure, through the performance of a thorough curettage with or without the associated atmocausis, within the surgical sphere. A radical cure is the only sure procedure in a large percentage of cases. This if attempted at an early period, can be caried out safely by the performance of a vaginal hysterectomy; a hysterectomy of the simplest form, its sole purpose being the removal of the uterus only. The tubes and ovaries, unless special indications are found for their removal, are left in situ. Under these circumstances the operation is one practically without any mortality, and can safely be recommended where the diagnosis has been made, especially where the diagnosis has been confirmed by the mild surgical measures of curettage and atmocausis.

THE PROGNOSIS IN TABES DORSALIS

By TOM A. WILLIAMS

Foreign Corresponding Member of the Neurological and the Psychological Societies, Paris; Associate Member of the Clinical Society of Mental Medicine, Paris; Neurologist, Epiphany Free Dispensary

Washington, D. C.

At one time a diagnosis of locomotor ataxia seemed like a sentence of death to the patient, for many would sooner have died at once than suffer the agonizing pains in the limbs and back, the vise-

like grip of the girdle sensation, the nauseating horror of the gastric crises, the inanition, the sickening rectal tenesmus, the inconvenience and distress of chronic cystitis, and finally a motor disability so impaired through ataxia as to make locomotion an effort and pain rather than a pleasant exercise.

A vague picture of this kind still floats in the back of the mind when tabes dorsalis is envisaged, even by those who know that such a gloomy prognosis is now the exception rather than the rule, so difficult is it to dismiss the prepossessions derived from the classics.

Now, recent investigations tend to show that tabes is not a passive necrobiosis of the sensory neurone in the posterior columns. The death of the posterior column fibers is secondary to an inflammation of the posterior root with which they are continuous. (For the demonstration of this the reader interested may consult the author's articles Amer. Jour. Med. Sciences Aug. 1908, and March 1910; Med. Record (Treatment) April 10, 1909; also Brit. Med. Jour. Oct. 2, 1909, and International Clinics, Spring 1910; (Prodromes) Med. Record, Feb. 5, 1910; (Diagnosis) Archives of Diagnosis, July, 1909.)

It is there shown that tabes is syphilitic, and that no mystery attaches to its pathology. Now, syphilis is amenable to mercury more or less constantly; and yet many therapeutists believe that tabes is not thus amenable, while others report great improvement and even arrest under its use. How can we account for the discrepancy?

We must remember that tabes is a late manifestation of syphilis and appears to be a sign of lowered resistance to the virus; for in some cases, it ensues relatively early, and very often indeed first shows itself or when present becomes greatly aggravated as a result of privations, excesses and intoxications, as clearly demonstrated by its appearance among the Russian officers during the war with Japan. Now, the researches of Vincent (Thèse de Paris 1910) show that a slow meningitis is present long before nervous symptoms appear. We detect this by the increase of lymphocytes in the cerebro-spinal fluid taken by lumbar puncture. In one of his cases, a meningitis lasted four years before marked improvement occurred under treatment, which had been begun on account of facial paresis and spasm.

So slow a response is less usual, however, than is such an improvement as is shown by two of my own cases of meningo-encephalitis, as well as by the six which Dana reported in 1904. None of these cases had yet developed tabetic symptoms, which proves the importance of detecting tabes *before it begins,* so to speak. To do this, a knowledge of the pathology helps one to interpret early symptoms which may or may not be tabetic; thus fleeting twinges in the limbs and perineal region, occurring now and then for a few days and then passing off for weeks, are highly suggestive of irritation of the roots. I have two cases of this kind, both medical men. In the first, pretabetic irritation was derided by many English neurologists, but the patient followed my treatment in spite of this; and after a few months was free from symptoms which had troubled him over four years. I insisted upon courses of injections of soluble mercurial salts deep into the gluteal muscles.

The other case has taken the French pill of double iodide continuously for six years; and it is only lately that he has been troubled by the paresthesiæ in the legs, most marked in the morning. He naturally took a gloomy prognosis; but changed this after his improvement upon temporary stoppage of mouth medication and the cessation of tobacco.

Another case of meningo-encephalitis, nervous erethism and anxiety, after improving for three weeks, suddenly became worse; but these symptoms were quickly removed by diminution of the proteins at the evening meal, and a better regulation of the patient's exercise, as well as a complete suspension of smoking.

Thus *prognosis depends upon treatment;* and this consists of more than a mechanical exhibition of mercury; for the resistance of the patient must be fortified by the hygienic measures we employ in other granulomata, e.g. tuberculosis.

But the prognosis depends primarily upon *early diagnosis;* for it must be remembered that the secondary degeneration of the fibers of the diseased roots can never be repaired. An ataxic who learns to walk by means of the exercises devised by Fränkel improves, not because the nerve paths grow with exercise as does a muscle, but because he educates himself to utilize the few which remain; in other words, he forms a new walking automatism.

The early *bladder pains* with retention and partial incontinence

which so frequently usher in tabes, are very often treated as simple cystitis, not only by general practitioners but also by genito-urinary specialists. The drugs and instruments used are most damaging to a mucous membrane of which the trophicity is lowered by the disease of the spinal roots concerned in its supply; and the treatment causes a real cystitis, trophic or inflammatory in a bladder whose greatest need is protection from the slightest trauma. The case is strictly analogous to the conjunctivitis which so easily occurs after damage to the ophthalmic division of the fifth nerve, the trophic nerve of the eyeball. The inflammation of the conjunctiva can always be prevented by protecting it from the minute traumata of particles of dust.

The moral should be obvious; and every case of retention of urine and pain in the bladder, if there are no cellular elements or irritating substances in the urine, should be referred for an examination of the nervous system in case of an incipient tabes; for a chronic cystitis is a serious complication, and must be weighed in the prognosis of tabes dorsalis.

A not uncommon prodrome of tabes is sudden *diplopia*. Occulists may fail to assign this to its true cause, viz. an implication of one of the oculo-motor nerves in the meningeal exudate which precedes tabes. Thus a patient whom I saw as a paretic had two years before consulted a leading ophthalmologist here for a diplopia. All the satisfaction he received was a pair of correcting lenses. Had the cause of his diplopia been ascertained, the prognosis would have been very different, and he would have been saved from physical and mental ruin.

A very common error which aggravates prognosis is to treat as a simple or *nervous dyspepsia* what is in reality a series of gastric crises due to posterior root irritation. The narcotics used to assuage the pain of these particularly injure the patient's nutrition, so important a factor in the prognosis. Besides this, no radical remedy is given, and degeneration of root and posterior column is unchecked; whereas the early giving of mercury by injection usually arrests the pain in a few weeks by aborting the evolution of the radiculitis which is their cause.

A conjunction which is quite common is that of aortitis with the syphilitic meningitis which causes tabes. The pupillary changes

which were formerly attributed to implication of the sympathetic by the enlarged aorta are now known to be merely concomitants of the same pathogene, viz. syphilis.   Hence, every case of aortitis should be subjected to a careful examination of the nervous system, so as to anticipate the evolution of a tabes dorsalis by the detection of its prodromes and by their appropriate treatment.   Of course, the aortitis cannot be repaired; but it may not be lethal in extent; and like the rest of the syndrome which has been named after Babinski, it is susceptible of the arrest which mercury often brings.

Instances might be multiplied; but from the foregoing facts and discussion, it is evident that the prognosis of locomotor ataxia depends largely upon its diagnosis at a stage when only the prodromes are present, and its treatment by energetic medication and careful hygiene before the destruction of an amount of central nervous tissue incompatible with function.

As to duration of life, the progress of the disease is generally slow; by intensive treatment the progress may be arrested at any stage and the patient remain relatively comfortable for the rest of his days in spite of a disability of locomotion, vision or urination already existing.

MULTIPLE MALFORMATIONS OF THE CENTRAL NERVOUS SYSTEM (PORENCEPHALY, DIPLOMYELIA, ETC.). THEIR INTERPRETATION FROM A CLINICAL STANDPOINT

By ALFRED GORDON

Associate Member of Société Médico-Psychologique, Paris, France; Neurologist to Mount Sinai, Northwestern General and Douglass Memorial Hospitals

Philadelphia

(From the Pathological Laboratory of Mount Sinai Hospital)

The observation described here belongs to the rarest occurrences.   The anatomical changes found in this case postmortem are at variance with our fundamental knowledge concerning centers,

tracts and function of sensory and motor fibers. The various malformations discovered macro- and microscopically in the central nervous system are most astonishing, as in their presence one is highly embarrassed to explain the relationship between them and the comparatively normal mental and physical functions during life. One is at sea to understand the compatibility of life, when most important portions of the central nervous system are so deficiently constituted.

The history of this remarkable case is as follows:

A colored boy, 15 years old, was admitted to the Douglass Memorial Hospital in January, 1908 for attacks of unconsciousness. Investigation showed that his previous physical health was very good. He never had infectious diseases or other affections common to children. His birth was normal and at term. He was sent to school at 7, and while he made fairly good progress in studies, he nevertheless was considered by the teachers as a backward child.

Ten days before admission to the hospital he was suddenly taken with headache and a gastrointestinal disorder. Rapidly convulsive attacks developed. At first they occurred once a day, and as they increased in frequency, he was sent to the hospital. The mother reported that in the intervals between the convulsive seizures he also had attacks which could be inferred as to be those of petit mal.

On the day of his admission he had six attacks of petit mal, each lasting half a minute and consisting only of a sudden loss of consciousness. Gradually these attacks became more frequent and intermingled with genuine seizures of grand mal. The latter consisted of generalized convulsions with frothing at the mouth, biting of the tongue and involuntary micturition. The convulsive attacks occurred but two or three times a day, but the attacks of petit mal became gradually so frequent, that at the end of a week the patient presented a status epilepticus. He was totally stuporous and each attack of unconsciousness was immediately and uninterruptedly followed by another. No sedative medication, such as bromide or morphia, could arrest the frequency or diminish the severity of the seizures. The patient finally became comatose and died on the eleventh day after his admission to the hospital.

During that period a most careful examination of his viscera,
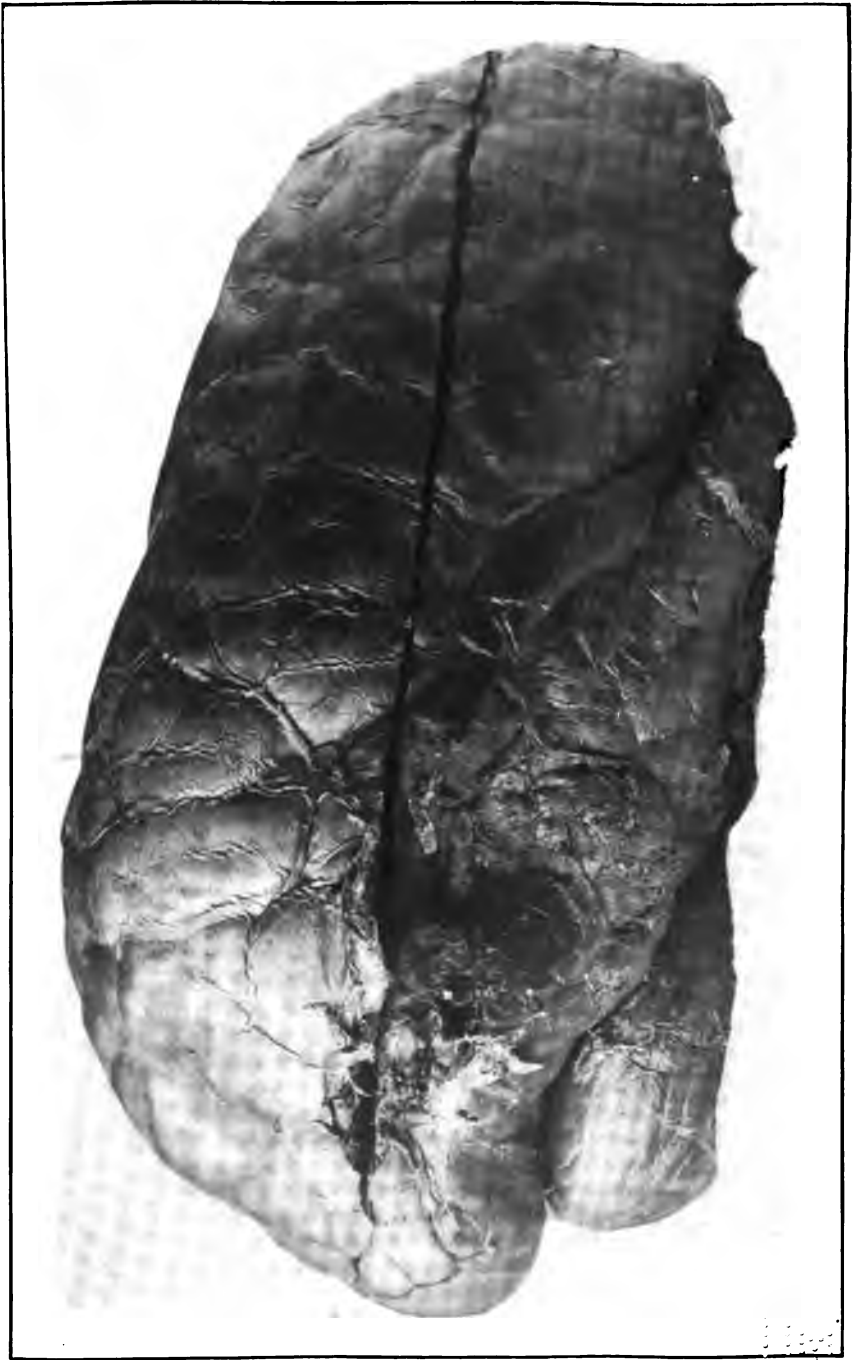
MULTIPLE MALFORMATIONS OF THE CENTRAL NERVOUS SYSTEM (PORENCEPHALY, DIPLOMYELIA, ETC.)
Alfred Gordon

urine and blood was repeatedly made but with negative results. The
patellar tendon reflexes were somewhat exaggerated and no abnor-
mal cutaneous reflex was observed. Sensations were equally intact.
Pupils reacted to light and accommodation and the eye-grounds pre-
sented no alterations. Permission was obtained to remove only the
brain and spinal cord, other viscera could therefore not be examined.

On removing the skull a large amount of cerebro-spinal fluid
escaped. No alteration was observed in the skull or membranes.
Some difficulty was experienced in removing the dura from the pos-
terior third of the 1st and 2nd temporal convolutions in the right
hemisphere. At that level a pore or a funnel-shaped depression in
the cerebrum was found. It was evident that it was a case of
porencephaly (see illustr.). The portions of the cortex in the im-
mediate vicinity of the depression presented a multiplication of small
fissures, so that the posterior portion of the first two convolutions
showed several small gyri. The porencephaly was therefore accom-
panied by microgyria. The gyri immediately adjacent had round
edges which sink into the cavity. The condition of the pia presented
a feature which is most characteristic of congenital porencephaly,
viz. it follows closely the depression in the brain. As it is well
known, in acquired or spurious porencephaly the pia does not follow
the depression, but ends abruptly at the border of the cavity. Kun-
drat (Die Porencephalie, 1882) was the first to call attention to this
differentiating feature. The cavity was confined to the area men-
tioned and a transverse section showed that there was no com-
munication with the ventricles.

The seat of the malformation is quite unusual, at least it is one
of the most infrequent. In Audry's investigations (Revue de Méde-
cine 1888) covering 96 cases of porencephaly only four times it was
found in the temporal lobe. The entire right hemisphere was
smaller than the left. No other malformation was noticed either
on the cortex or on transverse and vertical sections of the entire
cerebrum.

The spinal cord presented the most singular peculiarities both
macroscopically and microscopically. From the lower thoracic seg-
ment down to the sacral segment the cord was double. Otherwise
speaking, before a section was made, that portion of the cord was
strikingly thickened. Only on a transverse section of the mass the

double cord was seen.   In its upper portion the various elements of
the additional cord were not distinctly differentiated, but in lower
sections a gradual development of a genuine cord could be seen.
Specimen D shows the fully developed mass in a shape of a genuine
spinal cord attached to the lumbar segment of the original cord.   It
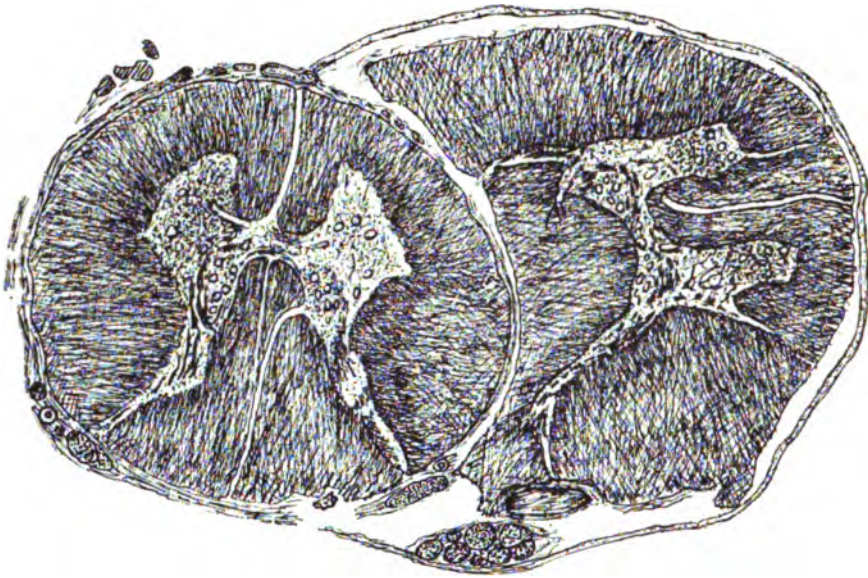
FIG. D

presents a concave side by means of which it embraces one half of
the cord itself.   The two cords are surrounded by one dura mem-
brane.   The additional cord has its own posterior roots, as well as
the original cord, but no anterior roots can be seen.   The appearance
of the cornua is different in both cords.   While the original one pre-
sents its proper shape and size, the abnormal one is that of a higher
level of the spinal cord.
    Lower sections of the above mass showed again a gradual dis-
appearance of the various elements of the additional cord, so that
at the level of the sacral segment only traces of gray and white mat-
ter were noticed.   At a still lower level only the original cord could

be seen. One anterior cornu of the original cord is practically free from cells; only a few cells are scattered in its very anterior portion and they are well preserved. Their size and form are those of cells of a normal lumbar segment.

Figure C represents a section of the upper thoracic segment of the cord. One of the anterior cornua shows absence of cells in at least one half of the body. A cavity is seen in the anterior white
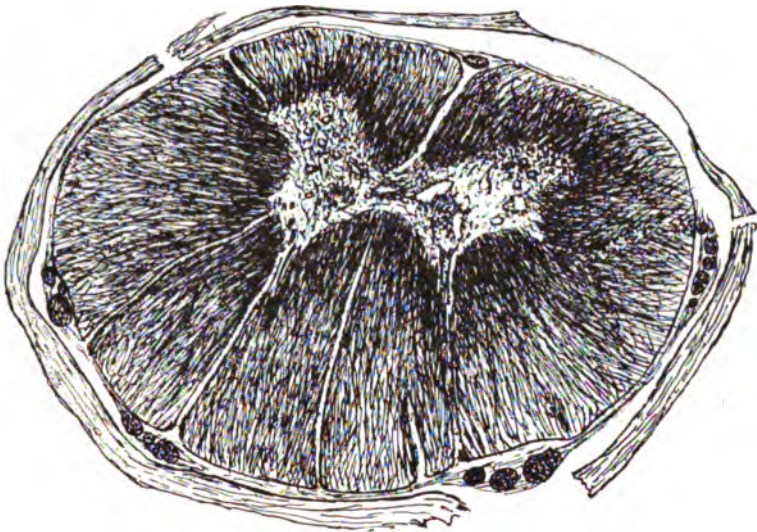
FIG. C

commissure near the affected cornu. Staining of this section with ammonia-carmin shows that this condition of the cornu is not the result of a former inflammatory state, such as acute anterior poliomyelitis. No proliferation of connective tissue could be seen in lieu of the cells. There is merely an absence or a lack of cells which have probably never developed.

A specimen from the lower cervical segment (Fig. B) shows multiple peculiarities. First of all the two halves of the cord are unequal. The anterior fissure is unusually large. The central canal is dilated and in the anterior white commissure three cavities are seen. One anterior cornu shows a considerable lack of gray matter.

The other anterior cornu is elongated laterally and curved; it is
thinner than its fellow of the other side. The largest part of it is
deprived of cells, which is particularly well seen when the specimen
is stained with ammonia-carmin. In the proximal portion of this
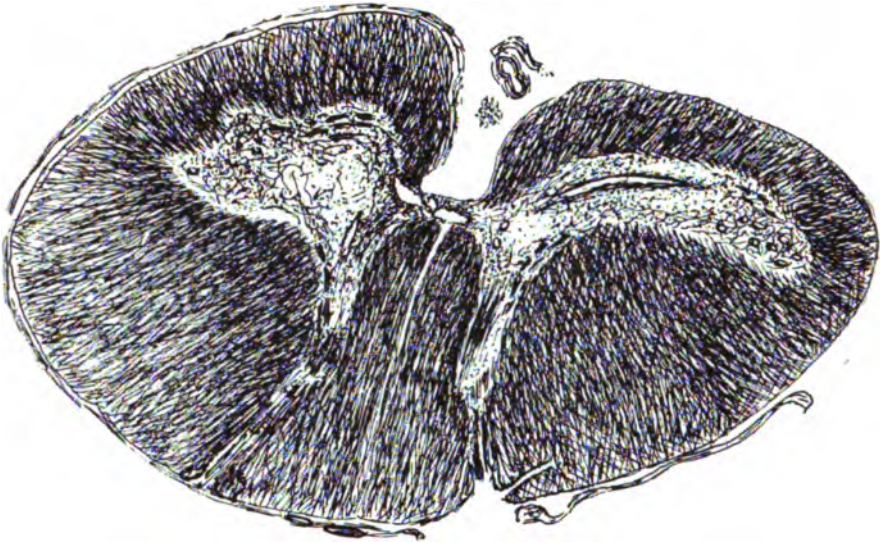
FIG. B

cornu an elongated cavity is seen and the base of the cornu is also
deprived of gray matter. The posterior cornu on the same side is
shorter and decidedly wider than its fellow on the opposite side. The
smaller half of the section is less expanded than it is usually seen
in lower cervical segments and presents the shape of a cone.

Fig A represents a specimen of the upper cervical segment.
The anterior cornua differ from each other considerably in size and
shape. One presents a normal appearance with the exception of
its center, where no cells can be seen. The other anterior cornu is
unusually elongated in an upward direction so that it forms with
the posterior cornu one long column. The largest part of this col-
umn is free from cells. A few cells are seen in the very anterior
portion of the anterior column. The latter almost reaches the
periphery of the cord and differs totally in shape and size from its

fellow on the other side.   Through the entire length of the abnormal gray column and reaching the periphery of the cord on both ends is seen a long cavity, which divides the half of the cord into two narrow halves.   The walls of the cavity do not present a torn tissue, but on the contrary are composed of a well organized tissue.
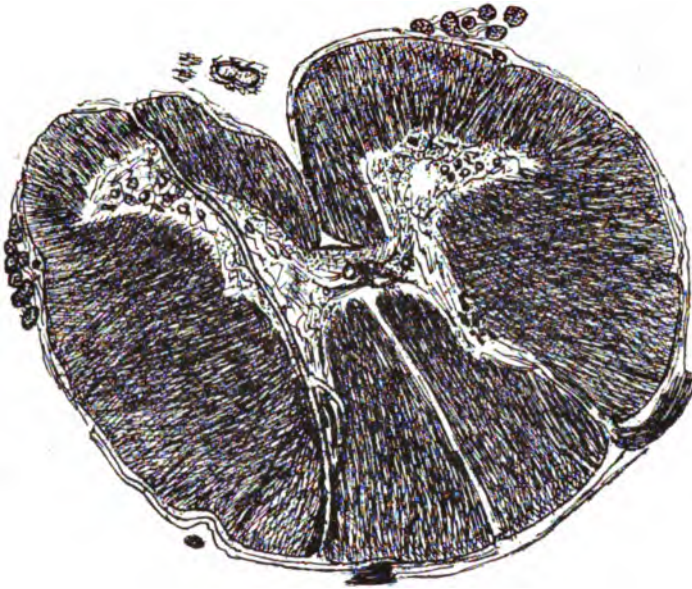
FIG. A

The findings of this case are certainly most unusual.   When we consider the fact that the boy lived up to the age of 15 without presenting a single disturbance in his motor and sensory functions, we must admit that the condition is very difficult to explain.   The presence of cavities in the anterior white commissure of the spinal cord and the absence of syringomyelic sensory dissociation during life; the presence of deformed cornua with lack of cells of motor and trophic nature, and absence of paralysis or atrophy in the lower and upper extremities or in any part of the body, are all most singular findings.   Moreover, the double cord in the lower thoracic and lumbar segments did not present any special disturbance during life.

An attempt, however, may be made to explain this discordance between the clinical and anatomical conditions. When a pathological condition arises in an individual heretofore normal, the new inflammatory or otherwise morbid state naturally must disturb the corresponding functions of the affected individual. A cavity in the cord, an acute inflammation or hemorrhages in the anterior cornua, a chronic destruction of the cells of the cornua, will all create a syringomyelic syndrome, acute or chronic poliomyelitis, respectively. Atrophy, paralysis, etc., will be the consequence. When, however, the abnormal condition is a congenital one, the result so to speak of agenesis, of malformation, the results may be different. Those few cells in the gray matter that are present may fulfil complete service during the individual's life, they supplement, so to speak, the undeveloped portions of the gray matter. The child grows up with those few cells without having a special need for more cells. It seems that the former can take full charge of the motor and trophic functions. The same explanation can be applied to the absence of some of the crossing fibers of Gowers' tract in the anterior commissure; the cavities seen in that vicinity are not excessive in our case, not all the crossing fibers are absent, and those present probably exist in an amount sufficient to perform the necessary function characteristic of Gowers' tract, viz. the conduction of sensations of pain and temperature.

The interpretation just given is of course only tentative. An analogy is found here to the phenomena observed during life, viz., when the individual becomes deprived accidentally of the function of a symmetrical organ, the intact organ takes up the other's destroyed function and may become highly developed. The difference lies, however, in the fact that in a pathological state an organ will be actually affected and symptoms of loss of function on the corresponding side will be present, while in cases of congenital defects or rather in cases of agenesis, the earliest fetal development will not suffer to the extent of a pathological condition occurring during life, and the organ that is developing uninterruptedly will from the earliest moment develop to the extent as to be able to supplement the organ that failed to grow.

As to the porencephaly, it was present in my case on the right side. The boy being right-handed, a similar lesion in the left hemi-

sphere would have perhaps rendered him word-deaf, or, speaking more accurately, in view of the congenital nature of the defect, he would have been born with a deficient hearing center. The presence of the anomaly in the right hemisphere explains to a certain extent the integrity of that particular function in the patient.

The cause of the sudden development of convulsions after 15 years of continuous good health cannot be very well explained by the porencephaly. A microscopical examination of a portion of the motor areas revealed nothing to indicate a local irritation. The tissue immediately surrounding the cavity of the temporal convolution did not show upon examination an inflammatory or a meningeal involvement.

The case, therefore, belongs to the rare example of agenesis of the central nervous system, examples which cause considerable embarrassment in an attempt to explain the fact that certain malformations may be compatible with life.

THE DIAGNOSIS OF PRIMARY MALIGNANT DISEASE
OF THE CHOROID AND OF THE RETINA.

By J. H. WOODWARD

Professor of Ophthalmology, New York Post-Graduate Medical School and Hospital

New York

The primary malignant growths within the eyeball considered in this discussion are the sarcomata and the gliomata. Sarcomata attack the uveal tract and are observed in three situations, namely, in the iris, in the ciliary body, and in the choroid. They are present in two varieties: as melano-sarcomata, and, much less frequently, as leuco-sarcomata. According to Fuchs, we may expect to find twelve leuco-sarcomata in one hundred cases of sarcoma of the choroid. Both melano-sarcomata and leuco-sarcomata are growths of the iris and ciliary body, but they are more frequently observed as tumors of the choroid. Sarcomata of the iris and ciliary body are

rare. Sarcomata of the choroid are not rare. Although statistics indicate the occurrence of one case only in every 2,000 patients, sarcoma of the choroid is more common than those figures imply; and it is so important, moreover, that the possibility of its presence must be constantly borne in mind, especially when dealing with eyes that have become amblyopic, and particularly when confronted by amblyopic eyes that develop the symptoms of inflammatory glaucoma, and become cataractous.

Sarcomata of the choroid are seldom observed before the age of puberty. They may occur, however, at any age. In children leuco-sarcomata are relatively more frequent than melano-sarcomata.

The great majority of all sarcomata develop in adults after the thirtieth year, the decade of election of their occurrence being that preceding the fiftieth birthday. They are observed about as often in females as in males. They do not occur in both eyes. Their etiology is unknown.

Sarcomata of the choroid are very malignant, especially melano-sarcomata. Both destroy the organ in which they grow, and both escape from the eyeball sooner or later to invade the orbital cavity by propagation in continuity, and both are disseminated to the general system by metastasis, especially by metastasis to the liver. The rate of their growth within the eyeball follows no law that is known. It would seem, however, that in general, their growth is not very rapid. Metastasis is supposed to be imminent as soon as the sarcoma has escaped from the scleral tunic, but metastasis occurs with notable frequency before the disease has advanced to that stage of development. Sarcomata of the choroid are curable by surgical means, which must be applied early to attain that result. Recurrence may be observed in the orbit, but death ensues from metastasis. Timely diagnosis of the disease is, therefore, all-important.

Glioma of the retina is a disease of infancy and childhood. It is the most common malignant disease of the eyeball in children. LeGrange, notwithstanding his personal experience of several cases of leuco-sarcomata in young children, states that up to ten years of age one should look for glioma and after that age for sarcoma. He states that glioma is never observed after the twelfth year. In relative frequency to other ocular diseases its occurrence is as 1 to 2,500. It may be congenital. Some hereditary predisposition to it has been

noted. It occurs with about equal frequency in the two sexes. Binocular glioma of the retina has been observed from time to time.

Glioma of the eyeball occurs primarily in the retina. It is propagated in continuity into the vitreous and into and through the tunics of the eyeball. Sooner or later it invades the orbital cavity, and protrudes between the eyelids as an ulcerating, bleeding, fungous mass. Metastases to structures adjacent to the orbit and to remoter regions may be expected, but death may be due chiefly to exhaustion, consequent upon the disease in the orbit. Glioma of the retina is amenable to surgical treatment. An early diagnosis must be made and the radical operation performed immediately, in order to achieve that result.

The course of development of sarcoma of the choroid and of glioma of the retina is quite naturally subdivided into four stages: First, the initial stage; second, the stage of glaucomatous tension; third, the stage of perforation of the tunics of the eyeball, and, fourth, the stage of metastasis, or generalization of the disease. Each has symptoms peculiar to itself.

The symptoms noted in the first stage are: Failure of vision, ranging from a restricted scotoma to complete loss of sight; luminous sensations; flashes of light; colored halos about objects of regard; and distortion of the images of objects, due to detachment of the retina. Naturally, in children, of those symptoms failure of sight alone may be noted. The external appearance of the eyeball offers no sign of the presence of a tumor within. When the growth has attained sufficient development and the pupil is sufficiently dilated, a whitish, or yellowish, or reddish-yellow reflex from the depths of the eye is present. This is the sign of the amaurotic cat's eye, a very important diagnostic sign.

The symptom amaurotic cat's eye occurs in sarcoma of the choroid, in glioma of the retina, in suppurative hyalitis, in metastatic choroiditis, in fibrous organization of the vitreous, in tuberculosis of the choroid, and in simple detachment of the retina.

In the first stage of intra-ocular growths the pupil is normal. The tension of the eyeball is normal, or *subnormal*. Pain in or about the eyeball may be noted, but usually patients do not complain of pain so early.

In the stage of glaucomatous tension the symptoms are: Fail-

ure of sight, photophobia; pain in the eyeball, the orbit, and the corresponding side of the head, increasing in severity and becoming more and more continuous until perforation of the sclera occurs. The eyeball is injected as in primary glaucoma, the pupil is semidilated and immovable, the eyeball is tender, and the intra-ocular tension is above normal. The cornea becomes steamy as in primary glaucoma, and ophthalmoscopic examination is obstructed. The anterior chamber becomes shallow and may be obliterated, the lens often becomes cataractous, thus making ophthalmoscopic examination impossible. This stage may be prolonged for months, possibly for years.

In the third stage, the disease has extended from the eyeball into the orbit. The pain diminishes in severity and frequency and may cease. The intra-ocular tension may remain above normal, or it may become normal, or it may fall below normal. According as the growth develops in the orbit, exophthalmus and restriction of version of the globe may be added to the symptoms. Gliomata not only invade the orbit, but protrude eventually through the palpebral fissure as ulcerating, bleeding, fungous masses, in which nothing resembling an eyeball may be recognized.

In the fourth stage are added the symptoms of malignant disease of the liver, stomach, skin, heart, kidneys, bones, serous membranes, lungs, spleen, spinal column, lymphatic glands, pancreas, intestines, epiglottis, brain, in order of frequency as mentioned.

Inasmuch as the media are clear during the first stage and during a certain period in the second stage of these diseases, *ophthalmoscopic examination* is possible, and it is the most reliable method of diagnosis. Two cardinal pathologic facts must be borne in mind when examining such cases ophthalmoscopically. First, *sarcomata* of the *choroid* develop *behind* the retina, and, therefore, the tumor, at the outset, is covered by the retina which is lifted from its normal connections by the growth in the choroid. In other words, the retina lies between the eye of the observer and the growth. Such is the mechanism of the detachment of the retina in the beginning. Sooner or later the retina is furthermore detached by an effusion of serum, resembling simple detachment very closely. Simple detachment and detachment by tumor-development coexist in the course run by certain cases.

Secondly, *gliomata* are *tumors* of the *retina* developing *in* and *from* the *retina* and proliferating in the cavity of the vitreous so that the observer with the ophthalmoscope looks *directly* upon the growth.

In sarcoma of the choroid it may be possible to observe two sets of blood vessels coursing over the tumor, the superficial vessels being the retinal vessels and the deeper vessels being those proper to the malignant growth. When this state is observed one may be confident that a positive diagnosis of malignant diseases will prove true. The existence of hemorrhagic extravasations upon the growth strengthens the probability of malignant disease materially.

Such bloodvessels as may be observed in glioma are vessels of the retinal circulation, or derivatives of them. Some gliomata appear to be avascular.

Almost universally, sarcomata and gliomata develop as single growths, although there are exceptions to this rule. The differential diagnosis must be made from simple detachment of the retina, which occurs in high myopia; from traumatism; from tuberculosis of the choroid; from tertiary syphilis; from chronic suppurative choroiditis; from certain cases of exudative choroiditis; from certain cases of retinitis albuminurica, and from cysticercus. Furthermore, it is evident that, inasmuch as these tumors may develop in any part of the retina or choroid, their existence may not be noted early, unless a very careful search be made of the entire field lying within the scope of ophthalmoscopic examination.

It is especially important to make such scrutinizing examinations in every case presenting symptoms of glaucoma. Oftentimes cases that were apparently primary glaucoma have been proved to be cases of glaucomatous tension due to the presence of an intraocular cancer. Especial caution is obligatory in diagnosing primary glaucoma in eyes that are cataractous.

Transillumination of the eyeball by electric light is useful in diagnosing sarcoma originating in the preëquatorial region of the globe. Sarcomata so situated may obstruct the rays of light. Other pathological conditions having lesser obstructive properties will allow the rays of light to pass. Such illumination of the interior of the globe will serve to reveal the contour of the growth and its relations in suitable cases. But while transillumination will assist in the in-

vestigation, a positive diagnosis should never be based upon its rev-
elations alone.   Finally, a careful history of the case is materially
important.   Such a history is not readily obtainable even though the
patient be a very intelligent person.   A general survey of the entire
system, and an examination which demonstrates that primary cancer
does not exist elsewhere, are essential to the diagnosis of primary
malignant disease of the eyeball.

DIAGNOSTIC ERRORS IN ABDOMINAL SURGERY

By J. H. CARSTENS
Detroit, Mich.

The difficulties of making a diagnosis of abdominal conditions,
it seems to me, increases with one's experience.   The more cases we
see the more difficult or even impossible it appears, to make a correct
diagnosis.   In fact, some cases are difficult to diagnose after the
abdomen has been opened.

We often find that symptoms produced by pathologic conditions
in some cases, will be entirely absent in others.   In fleshy people, for
instance, it is almost impossible to make a correct diagnosis.   In many
cases we must resort to an exploratory operation because we know
there is some trouble, as the patient has tried all kinds of treatment
without benefit, and is unable to follow his vocation.

Of course, I insist that efforts should be made to properly diag-
nose every case.   Nevertheless, we will often fail in spite of our best
efforts.

Ectopic gestation taken for appendicitis.—Two years ago, Mrs.
M. G., a widow, twenty-eight years old, was operated on by me for the
removal of the left cirrhotic ovary.   She married again six months ago.
Twenty-four hours before I saw her she was taken with severe pains
on the right side, with a well marked soreness at McBurney's point,
radiating downward.   Her temperature was 100.5 deg. F., pulse 84
per minute.   Being a well marked case of appendicitis I immediately
sent her to the hospital and operated the same evening.   Making the
usual incision, blood issued from the abdomen.   I knew that I evi-

dently had made a mistake in the diagnosis. I increased the incision, downward and removed an ectopic gestation of the right side. The appendix, though normal, was adherent. Patient made an uninterrupted recovery.

This case shows how easily such a mistake can be made. In appendicitis there is elevation of temperature, and the pulse is sometimes slow, at other times fast, the latter condition occurring generally only after the second or third day. In extra-uterine pregnancy we have the reverse, always normal temperature and a gradual hour by hour increase of pulse rate. In fact this is the diagnostic symptom. In the case referred to this was reversed.

Shock taken for extra-uterine pregnancy.—Mrs. E. C., twenty-seven years old, mother of two children, while in a street car was thrown heavily forward. She became very pale with a pulse of 120, which in the course of a few hours increased to 140. Vaginal examination showed a soft boggy mass in the cul-de-sac, but on account of the pain and bloating, a satisfactory examination could not be made. She had not menstruated for the last two months. It was to me a clear case of extra-uterine pregnancy, with rupture as the result of the accident. She was placed under chloroform and an abdominal operation performed. While making the incision, I noticed on reaching the peritoneum that it was not black beneath, as is always the case when there is blood in the abdomen. Upon introducing my finger I found both tubes normal, but the pregnant uterus retroverted and firmly wedged in the pelvis. It was lifted up and placed in position, and the abdomen was closed. She made a quick recovery.

The retroversion and shock produced symptoms of grave internal hemorrhage, pallor and a rapidly increasing pulse rate.

Appendicitis and pregnancy.—Mrs. J. C. K., twenty-seven years old, mother of two children, the youngest three years old, has been in fair health except during the last year, when she had a number of attacks of pain in the region of the appendix, some quite sharp, which compelled her to remain in bed for a day or two. She was advised by her physician to have her appendix removed. Except for the last menstruation, which was rather scant, she had menstruated regularly. Expecting it again in a few days, she asked me if this would interfere with the operation, and I told her it would not. On examination I found the abdomen tender, uterus retroverted and rather large, and

a purulent discharge from the cervix. The tenderness prevented me from making a thorough examination. She went to the hospital in a few days and I operated upon her. Before I curetted the uterus I found the peculiar violet discoloration, which made me suspect pregnancy, the cervix was hard, and from it issued a muco-purulent discharge. I therefore carefully curetted the mucous membrane of the cervix only, being particular not to get beyond the internal os, and swabbed it out with pure carbolic acid. I then opened the abdomen and removed the appendix in the usual way. I now examined the uterus, found retroversion and pregnancy. I could easily lift the uterus into its place, and with the right round ligament I made a modified Gilliam operation. She made a smooth recovery and continued the pregnancy.

This patient suffered clearly from catarrhal appendicitis, but was also pregnant, and had a cervical endometritis which was likely to cause trouble after labor.

A full prolapsed stomach mistaken for an ovarian tumor.— Mrs. M. C., forty-seven years old, gives no history of diseases in childhood. Menstruation started at fifteen years of age; the menses were always regular. Typhoid fever twenty-four years ago, scarlet fever seven years ago. Married for twenty-eight years; has had three miscarriages, two children, one of whom is living at the age of twenty-four. Four years ago she was operated on for lacerated cervix and perineum. She has not menstruated since. Ten months ago, the first symptom, pain in the abdomen, especially in the lower part, was noticed. This pain has continued more or less ever since. The patient has been constipated and troubled with frequent and painful urination; she also presents symptoms of indigestion. At times she could not walk and felt a sensation as if something heavy was coming down in the vagina. This would cease when she would lie down. This patient came to me for examination. I found that there was a solid mass at the brim of the pelvis, dull percussion and fluctuation. The mass could be felt above the bladder and was movable by changing the position of the patient, but was not connected with the uterus. There seemed also to be an ill-defined mass in the region of the liver. There was much flatulence and soreness. It seemed to me a clear case of ovarian cyst. Patient went to the hospital in a few days. Having the history and diagnosis I made no

further examination until she was under the anesthetic, and to my astonishment I was not able to find the tumor, but instead found the liver very much enlarged with a growth downward. I certainly thought it a proper undertaking to make an exploratory incision. The liver was found very much enlarged and prolapsed, with a tongue-like prolongation reaching below the umbilicus. I could not see the stomach, but finally found it down in the pelvis, just above the bladder, and behind it and in the same locality was the transverse colon. All the abdominal organs including the kidneys were prolapsed. Besides this general ptosis, there existed no abnormal condition. I sewed up the abdomen without having tried to fix any of the organs. I thought the case a proper one for a belt and physical exercise. I had mistaken a prolapsed full stomach for an ovarian cyst.

I could relate many more cases, such as ureteral stone which was chronic appendicitis, suppurating gall bladder which proved inflammation of the appendix, etc. Mistakes like the foregoing make us more lenient towards the errors of others.

LUPUS VULGARIS MISTAKEN FOR AND TREATED AS SYPHILIS

By GEORGE M. MAC KEE

Instructor in Dermatology, New York University and Bellevue Hospital Medical College; Attending Dermatologist, College Clinic; Consulting Radiologist, St. Vincent's, Red Cross and New York Throat, Nose and Lung Hospitals

New York

This patient first came under my observation five years ago, when he entered the service of Dr. A. D. Mewborn, in Dr. Fordyce's clinic. He is an American of Italian parentage, and is twenty-three years old. The patient's father is living and apparently well; the mother died of tuberculosis about one year after his birth He has a half-brother nine years of age, and a half-sister seven years older,

both in perfect health. No definite history can be obtained of the eruptive diseases of childhood, but he has always been delicate and subject to catarrhal affections of the nose and eyes. About fourteen years ago he began to suffer from a swollen and crusted condition of the nostrils, which was soon accompanied by enlarged and suppurative glands in the neck. About ten years ago the septum of his nose became perforated, leaving an opening about one-half an inch in diameter with a slender, contracted bridle at the external orifice. Two years later the right ala of the nose, and the lip became swollen, red, and covered with crusts, which left ulcers and scars. A year or two before he first came under my observation, patches appeared on the roof of the mouth and fauces.

His case had been repeatedly diagnosed as syphilis, and he had been treated in various clinics with mercury and iodide, without benefit. When he first entered Dr. Fordyce's clinic, a thorough examination was made, when the following points of interest were elicited:

The patient was undersized, poorly nourished, and mentally deficient. His chest was rachitic, with enlargement of the costo-cartilage junction. There were no signs of tuberculosis of the lungs. Enlarged cervical glands and cicatrices were present in the neck. The right wing of the nose was nearly destroyed by an ulceration which was bordered by a nodular margin, while the bottom of the ulceration presented a granular or papillomatous surface (see illustration). This appearance was more marked in a patch at the tip of the nose. The septum, consisting of a slender cord, bounded the oval perforation which extended back to the vomer. The posterior boundary of the perforation was so thickened by perichondritis as to entirely occlude the left nostril and almost block up the right nasal opening. The gums on the labial surface above were very red and spongy, with an ulceration above the central incisors. There were also ulcerative and vegetating or granulomatous lesions of the hard palate and fauces. An ulceration of the left cornea and some opacities in the right cornea were also noted.

In the differential diagnosis syphilis was excluded on account of the slow progress of the disease, and from the history. Blastomycosis was thought of, but specimens stained by methylene blue and by Wright's stain failed to show the blastomyces. Tubercle bacilli were
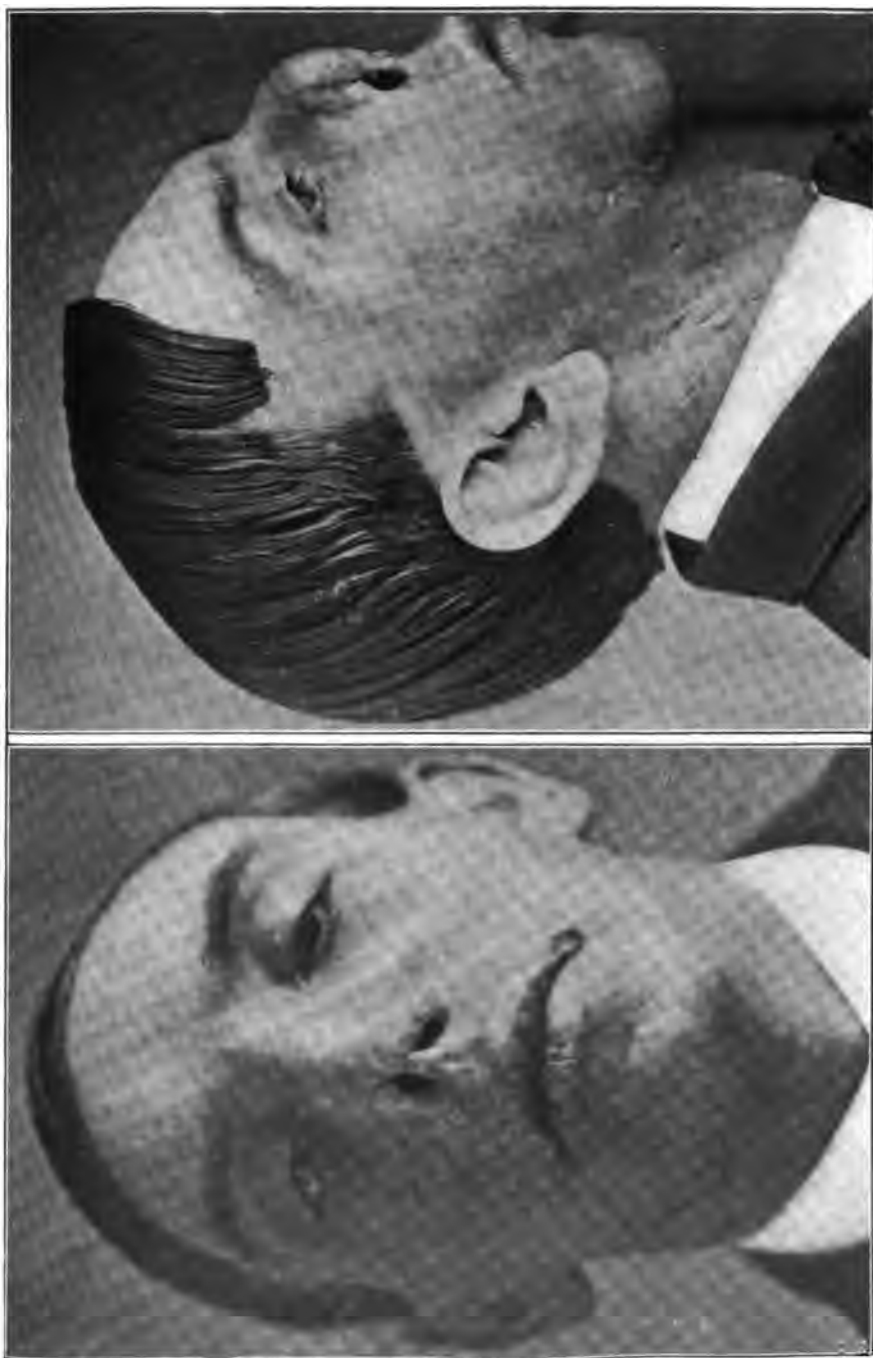
LUPUS VULGARIS MISTAKEN FOR AND TREATED AS SYPHILIS
George M. MacKee

not found in the sections which were made, but giant cells and lupic nodules were noted.

The diagnosis of lupus vulgaris was made, anti-syphilitic treatment discontinued, and the patient referred to my office for X-ray treatment.   The disease promptly responded to X-radiation, and in a few months the patient had entirely recovered.   Since then Dr. J. A. Bodine has performed a plastic operation on the patient's nose, which has considerably improved his appearance.

The case is of importance in showing the value of a proper diagnosis.   If this case had been treated by the X-ray, instead of by anti-syphilitic treatment, before extensive destruction had taken place, the disease would have been cured without deformity.

This patient was presented before the New York Dermatological .Society, January 24, 1905 (The Journal of Cutaneous Diseases, April, 1905, p. 172); also October 24, 1905 (The Journal of Cutaneous Diseases, December, 1905); and before the Section on Dermatology of the New York Academy of Medicine on December 1, 1908 (The Journal of Cutaneous Diseases, April, 1909).

ADIPOSIS DOLOROSA

By   J. ARTHUR BOOTH

Consulting Neurologist, French, Manhattan Eye, Ear and Throat, Perth Amboy and Englewood Hospitals

New York

The case reported in this paper presents a symptom-complex first described by Dercum in 1888, to which later he gave the name of adiposis dolorosa.   The disease consists of a symmetrical lipomatosis combined with vasomotor and sensory symptoms, which are so prominent a feature as to justify its separation from the other forms of lipomata.   Although twenty years have elapsed since the original contribution of Dercum, the recorded cases number only fifty, so the disease must be regarded as an uncommon one, which prompts me to record the following instance. M. G., sixty years old,

female, widow. Family history: Father died from wounds received in the civil war. Mother died from pneumonia. Maternal and paternal ancestors were born in Scotland, living to an advanced age and careful inquiry failed to reveal any evidences of insanity, epilepsy or goitre and none of the patient's relatives had ever suffered from symptoms similar to her own. Personal history: As a child she was well and strong, never having had any serious illness. Menstruation was established at the age of thirteen without complications. She married at seventeen and had in all five children, four of whom died in infancy from scarlet fever. One son now living in his forty-first year, is well and strong. The patient enjoyed good health until the onset of the menopause, when she had metrorrhagia, flowing twenty-eight days in each month. In 1900 hysterectomy was performed for a fibroid condition of the uterus. In 1906 the patient's attention was called to the increase in the size of her legs and accompanying this were peculiar numb, cold sensations with sometimes sharp stinging pains. This enlargement gradually extended, involving both knees and thighs and during the last year two pendulous masses appeared, one on the inner side of each knee. Lately the pains and vasomotor symptoms have become almost intolerable, and are so severe at times that she cannot bear even to have her clothes touch the legs. The sensations are paroxysmal in character, being much worse for hours and days at a time, but never entirely absent. "I feel as if my legs were like lumps of ice, as if they were paralyzed with cold. As if an electric battery were going up and down. The soles of my feet feel as if I were walking on a picket fence. In the morning they are so stiff I have to rub them for an hour before I can get around. My legs are dead weights and might as well be wooden ones." These expressions of the patient give a good idea of the subjective symptoms.

Examination: The patient is five feet six inches in height and weighs one hundred and eighty pounds. Her face is expressionless and she is apathetic and slow in all her movements. Questions are answered intelligently and her memory is good both for recent and former events. The skin feels normal, and no change in the thyroid gland can be made out. There is no ataxia and her equilibrium is normal. The knee reflex could not be obtained nor the Babinski sign. On removing her shoes and stockings an enormous enlarge-

ment of both legs is disclosed. The enlargement involves both legs and thighs. The skin itself is not thickened; not adherent to the adjacent tissues, and not pitting on pressure. On the inner side and just below each knee are oval pendulous masses of fatty tissue, soft and elastic, with the sensation of a mass of worms to palpation. Pressure made here or on any part of the legs causes a tingling pain to dart through the legs. No marked objective disturbances in the functions of the peripheral nerves are found.

Remarks : In reviewing the above history we note the presence of the following symptoms, viz.,—the localized fatty deposits, pain, tenderness, vasomotor disturbances and apathy, which certainly justifies one in the diagnosis of adiposis dolorosa. Moreover the patient is a woman of middle age, also giving a history of metrorrhagia, which is of additional importance, according to the facts noted in other recorded cases. The true pathology of the disease remains still obscure, although either the pituitary or thyroid gland have been found abnormal in a number of the observations so far made. In seven cases there was atrophy with compensatory hypertrophy of the thyroid, and in three a tumor of the pituitary body was found. In two cases microscopic examination showed a low grade of neuritis. From this evidence, then, it is doubtful whether the symptoms are the expression of a separate disease-process or are simply an extreme deposit of fat complicated by a neuritis.

The changes found in the thyroid, and the good results obtained in a few cases by the internal administration of the thyroid extract, support the theory that the functions of this gland are at fault and play an important part in the etiology of the disease. In the present case, however, no good results have been obtained, though thyroid medication has been faithfully tried.

A CASE OF TOTAL OPHTHALMOPLEGIA AND BILATERAL FACIAL PALSY

By AUGUSTUS A. ESHNER

Professor of Clinical Medicine, Philadelphia Polyclinic and College for Graduates in Medicine; Physician, Philadelphia General Hospital; Assistant Physician, Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases

Philadelphia

A tailor, 45 years old, complained of visual impairment, with diplopia, of eight days' standing, and pain in the orbits and all over the head and increased lacrimation, and he gave a history of exposure to draft four days earlier. The symptoms were worse at night, and sleep was disturbed. Vomiting had occurred on two occasions, and there were acid eructations after eating, with a bad taste in the mouth. The appetite was poor and the bowels were sluggish. Micturition was normal, and the action of the sphincters was unaffected. There was vertigo and a feeling of coldness. Gait and station were good, and the knee-jerks were preserved. The eyes appeared prominent and staring. At times the upper lids were retracted, exposing the sclerotica above the cornea, while at other times they drooped in partial ptosis. The eyes could not be closed perfectly and there was inability to elevate the brows. The act of frowning could be executed but feebly. Both eyes were turned inward, the right apparently the more at one examination and the left apparently the more at a subsequent examination. There was little power to rotate the eyes in any direction. The pupils were full and equal, a little excentric, and the left a little irregular. Both reacted to light, and at the first examination they contracted in distant vision and dilated in near vision, while later no reaction could be observed in accommodation. The face was rather smooth. The patient was able to separate the lips but slightly to display the teeth, and unable to purse his lips in an attempt to whistle. Mastication was difficult from weakness of muscles moving the lower jaw, and the patient was compelled to use his fingers to dislodge food from the cavity of the cheeks. Diplopia of simple character was present. Speech was difficult and articulation indistinct. Sensibility was pre-

served on the face. There was complaint of pain in the malar and submaxillary regions, and tenderness above and below the ears. Hearing was preserved. The grasp of the hands was moderately strong. The thyroid gland was not enlarged, nor was any other glandular enlargement present. The action of the heart was rhythmic, its sounds clear. The pulse was small and one hundred in the minute. The patient had had some febrile affection as a boy, and he had long been accustomed to drinking two small glasses of whisky daily. He denied all venereal infection.

Ocular examination by Dr. W. M. Sweet disclosed separation of the eyelids of between $\frac{1}{4}$ and $\frac{1}{3}$ in. on attempted closure. The left eye was found turned inward in concomitant convergence, with the right eye fixing. The pupils reacted to light, direct and indirect, and slightly in convergence. They were equal and measured $4\frac{1}{2}$ m.m. in diameter. There was slight power of internal and external rotation. The sensibility of the right cornea was somewhat obtunded. In both eyes were opacities of the vitreous and also of the posterior pole of the lens. The optic discs were oval and slightly pale. There was some absorption of retinal pigment in each eye.

It seems likely that the patient had some disease of the nuclei of the 3d, 4th, 6th and 7th nerves, probably of infectious origin, but the rare possibility of a peripheral neuritis has to be considered. The disorder can be compared to an inflammation involving bulbar nuclei analogous to that affecting the ganglion cells of the anterior horns of the spinal cord. Mercuric chloride, gr. $\frac{1}{24}$, and potassium iodide, gr. x, were prescribed thrice daily, and after the lapse of several days the patient thought there had been some improvement, the pain in the face being less, double vision not so pronounced, and ability to move the lips and to speak being increased. Headache still persisted and in sufficient degree to disturb sleep.

General Retrospects

DIAGNOSIS OF URINARY STONE IN CHILDREN

(A BRIEF REVIEW OF THE MORE RECENT LITERATURE)

By KINGMAN B. PAGE

Surgeon, Genito-Urinary Dept., O.D.P., St. Mark's Hospital

New York

LITERATURE

THOMPSON.—Diseases of the Urinary Organs, 1893.
MORRIS.—Diseases of the Kidney and Ureter, 1899.
FENWICK.—Radiography in Urinary Stone, 1908.
BISHOP.—Edinburgh Medical Jour., July, 1899.
HEATON.—Birmingham Medical Rev., Sept., 1897.
NEUHÄUSER.—Folia Urologica, Nov., 1909.
KAPSAMMER.—Nieren Diagnostik und Nieren Chirurgie, 1907.
HOLT.—Diseases of Infancy and Childhood, 1906.
KEEGAN.—Quoted by Morris.
FREYER.—Surgical Diseases of the Urinary Organs, 1908.
ERDMANN.—Medical Record, March 14, 1908.
FENWICK.—Ureteric Meatoscopy, 1903.

Contrasted with vesical concretions, renal stone is rare in children. *Thompson's* statistics, 1827 cases of vesical stone, show that nearly one half of the cases occur in children under the age of 13 years. *Morris,* in 188 cases of renal stone gathered from English literature, reports but one case under 10 years of age and 10 under 15 years. *Fenwick* shows several radiograms of renal stone in patients under ten years of age. *Bishop, Heaton, Neuhäuser* and *Kapsammer* each report several cases of nephrolithiasis occurring in the first decennium.

The rarity of clinical renal calculus is widely at variance with the autopsy findings. *Holt,* in 1000 autopsies in infants, reports the finding of uric acid infarctions or concretions in no less than 694 cases, only one stone, however, having been as large as a pea. This condition of uric acid infarction or the presence of concretions should not be regarded as essentially pathologic; it is due, no doubt, to the inefficient renal secretion and is corrected by the washing

away of the crystals or minute concretions on the establishment of full renal action. *Thompson,* writing of this condition, says: "Happily in the vast majority of cases—99 per cent., the concretion passes down into the bladder and is voided." The gradually increasing number of cases of renal stone reported, due to increasing accuracy of diagnosis, shows this to be rather optimistic for the kidney stone and decidedly too cheerful for the vesical condition.

Ureteral stone is much less common than the renal. *Bishop,* however, reports two cases of "sectio alta" for calculus impacted at the vesical termination of the ureter.

Vesical stone is of common occurrence in some countries. *Thompson's* statistics collected from the London Hospitals show that it is not uncommon in England. *Keegan* and *Freyer* both write of its extreme frequency in certain provinces of India. *Chismore* finds it to occur with greater frequency in the middle Pacific states than on the Atlantic side of the United States, where it is comparatively rare. The vast influx of immigration to this country during the past two decades, with its influence of heredity and environment (including diet and hygiene), will no doubt have the effect of increasing its frequency in this region.

Heredity and diet seem to play some part in creating a tendency to the formation of renal calculus in children. *Freyer* regards diet as a most potent causative factor and *Chismore* believes that the large amount of fruit eaten in California has calculus-producing effects. Insufficient amounts of milk and the chemical constitution of the potable water have also been held as accountable for the condition.

Many cases of renal stone in infancy are seemingly latent, producing no symptoms creditable to the condition. The closer clinical observation of recent years reveals, however, that this is probably more frequently due to errors of diagnosis than to latency of symptoms. Pains of renal or ureteral origin are often attributed to intestinal or appendicular disturbance. It is certain, however, that a concretion may exist in the pelvis of the kidney for some years without the slightest apparent inconvenience to the bearer.

In early infancy, in the absence of a hydro-or pyonephrosis, the symptoms are generally too vague to lead to more than a hazy idea that all the abdominal pains are not due to colic. In older children loin pains on exercise or jolting, occult blood or hematuria, pyuria (pyelitis), hydro- or pyonephrosis, increased frequency of urination or diminished quantity of urine, complaints of vague vesical, testicular or penile pains will draw attention to the probability or possibility of the existence of renal or ureteral stone. The occurrence of pains in the appendicular region not conforming in symptoms or duration to the usual course of appendicitis in any of its forms, may

have its explanation in a migrating ureteral stone. *Erdmann* has drawn attention to this.

The diagnosis of vesical stone is much more readily made than that of renal concretion. Pain, often excessive after urination, stoppage of the urinary flow, blood alone or together with pus in the urine if infection has occurred, penile pain at the glans leading to the pulling on foreskin or squeezing of penis, pains on jarring, exercise or riding in a vehicle, and the relief of pain and urinary irritation in the recumbent position form so striking a symptom-complex that attention is at once drawn to the seat and cause of the trouble. *Freyer* gives a most graphic description of the actions of the juvenile victim of this condition.

The improvement in the technic of radiography and the modification and adaptation of cystoscopes of small caliber have greatly aided in the recognition of renal calculus. In the determination of the minute concretions of infancy the X-ray is of no help. In the larger stones of older children, with proper attention and care, a good radiogram can generally be obtained and the stone demonstrated, especially if the radiograms be taken, both directly and stereoscopically. Under certain circumstances, however, they may fail to cast a shadow, and the diagnosis must be made by a careful study of the syndrome. In the main, however, the X-ray is more reliable than in the adult.

With an instrument of small caliber cystoscopy is practicable at all ages of female children. In the male infant under 16 months it cannot be used; after the age of 20 months it may be employed after a preliminary incision of the meatus. The researches of a number of clinicians have shown the remarkable degree to which the average urethra may be dilated or stretched. The smallest catheterizing cystoscope is about 15 F. and can be used in girls after the third or fourth year and in boys after the sixth year of age.

The information conveyed by the cystoscope, aside from the view of the bladder, is confined to the condition of the ureteral meatus and observation of the urinary efflux. *Fenwick* has directed attention to the value of the changes in the ureteral meatus in cases of renal or ureteral stone. As the caliber of the ureteral catheter adapted to use with the small caliber cystoscope is so minute that it may be readily obstructed, it is much better, where age permits, to use the small segregator of Luys for the separation of the urine.

The routine chemico-microscopical examination of the urine is of value by demonstrating the presence of occult blood, and by pointing out, on the hand of quantity and quality of the anatomical elements, the probable seat of the irritation.

In the diagnosis of vesical stone the X-ray is of great assistance, but the cystoscope is invaluable. Whenever there is suspicion of vesical stone, cystoscopy, age permitting, should be immediately per-

formed; this procedure permits conclusions as to size, shape and probable character of the stone, and affords a knowledge of the condition of the vesical mucosa and ureteric orifices. The cystoscope, whenever available, is much better than any searcher. Combined recto-abdominal palpation has been mentioned as a useful diagnostic method, concretions, however, of a size to be palpable by this means occur very rarely.

THE PROGNOSIS OF TYPHOID FEVER IN PREGNANCY AND THE PUERPERIUM

(A REVIEW OF THE LITERATURE)

By ROSS McPHERSON

Attending Surgeon, Lying-In Hospital

New York

LITERATURE

BAMBERG, K., and BRUGSCH, T.—Über den Übergang von Agglutininen von Mutter auf Kind. (Med. Klin., 1907, No. 31.)

BOYD, G.—Typhoid fever complicating pregnancy. (Am. Jour. Gynæcol. and Pædiat., 1891-2, V.)

CHAMBRELENT.—Que deviennent les enfants des femmes atteintes de fièvre typhoide pendant la durée de leur grossesse? (Bull. de la Soc. d'Obstet. de Paris, VI, 1903, p. 312.)

FOULKROD, C.—Typhoid fever occurring during pregnancy. (Am. Jour. of Obstetrics, Aug. 1906.)

GLEIZE, A.—Contribution a l'étude de la fièvre typhoide pendant les suites de couches. (Thèse de Toulouse, 1904.)

KELLEY, J. T.—Typhoid in pregnancy. (Am. Jour. of Obstetrics, April, 1906.)

LAIDLAW, G.—Typhoid fever during pregnancy. (Chic. Med. Times, 1896, pp. 124-27.)

LITTLE, H. M.—Bacillus ærogenes capsulatus im Puerperal Fieber. (Centralblatt f. Gynäkologie, Vol. XXIX, No. 9, 1905.)

MacDONNELL, R. L.—A case of typhoid fever complicated with pregnancy. (International Clinics, 1892, II, pp. 99-109.)

MARKOE, J. W.—Pregnancy complicated by typhoid fever. (Bull. N. Y. Lying-in Hospital, Vol, I, No. 1, pp. 19-22.)

McArdle, T. E.—Intercurrent typhoid fever in pregnancy. (Trans.
Am. Ass. Obst. and Gyn., 1895, VII, pp. 442-46.)

Reiny, S.—Vomissements incoercibles de la grossesse; fièvre
typhoïde. (Bull. de la Soc. d'Obstet. de Paris, VI, 1903, p. 265.)

Rosenfeld, S.—Zur Kasuistik des Typhus abdominalis unter der
Geburt und im Puerperium. (Centralblatt f. Gynäkologie, Vol.
XXXI, No. 17, 1907.)

Roussel, A. E.—Report of a case of acute gastrectasis following
typhoid fever and premature birth; recovery. (Med. Rec., 1908,
pp. 136-38.)

Sprigg.—Typhoid fever in pregnancy. (Am. Jour. of Obstetrics,
April, 1906.)

Staubl.—Über das Verhalten der Typhus Agglutinine im mütter-
lichen und foetalen Organismus. (Münchener med. Wochenschr.,
1906, p. 798.)

The prognosis of any infectious disease must be greatly affected
by an accompanying process which tends to throw a greater strain on
the organism, and this must of necessity be true in cases of typhoid
fever occurring during the pregnant or recently pregnant state.
Most writers are unanimous in the opinion that any febrile disease of
long duration coincident with a pregnancy predisposes toward an
early termination of the condition, believing that this is especially
true of typhoid fever, and while the literature shows a number of
reported cases which were carried to a favorable termination, the
rule is to the contrary, as regards abortion and premature labor. That
the occurrence of typhoid fever in the gravid woman is not common
is shown by the fact that in the records of the New York Lying-in
Hospital, out of sixty thousand cases there delivered only three de-
veloped typhoid fever, or one case in twenty thousand. Of these,
all the mothers recovered, two children were still-born at term and
one born at term lived only a few days.

It is probable that before the days of the Widal reaction and
blood cultures, many cases of puerperal fever were considered as
cases of typhoid, which would account for the greater number re-
ported in the older literature. To-day such errors of diagnosis are
not excusable. Whether or not pregnancy predisposes toward im-
munity from typhoid fever is not certain, but from the fact of only
one person in twenty thousand having the disease, as above stated,
the thought seems worthy of consideration.

After extensive researches into the literature, *Laidlaw* believes
that pregnancy confers a certain immunity against typhoid fever,
but that when the latter does occur during the pregnant state it seri-
ously complicates the patient's chances for recovery; he also con-
siders that the destruction of the products of conception is practically

inevitable. He believes that the prognosis varies directly with the treatment given.

Kelley states that while the disease is rare in pregnant women, nevertheless it is usually followed by abortion or premature labor; he gives the statistics from various clinics, which would seem to confirm the statement. Both, maternal and fetal mortality, are increased, although this has been disputed by *Boyd*. The maternal mortality in pregnant women suffering from typhoid fever is estimated by *Kelley* from $14^3/_{10}$ to 20 per cent., and in the non-impregnated from 7 to 20 per cent. He emphasizes the importance of remembering that the diagnosis in both mother and child depends upon the presence of the Widal reaction.

MacDonnell brings out the fact that the majority of cases of typhoid fever occur before the patient is twenty-five years of age, whereas the majority of pregnancies occur after that time, which explains the theoretical immunity of the pregnant woman against typhoid fever. On the other hand, *McArdle* considers that the greater weight of authority and the principles of pathology indicate that the pregnant woman does not enjoy any immunity against typhoid. But he does believe that the gravity of the pregnant state is much increased by the complication of any severe zymotic disease. He asserts that the larger number of pregnant women who suffer from typhoid fever will undoubtedly abort. This, he thinks, may be due to the elevation of temperature, hemorrhagic endometritis and depression of the maternal blood pressure with accompanying asphyxiation of the child. Typhoid fever in the child may be due to direct blood infection with resulting death of the fetus, followed by the expulsion of the dead foreign body.

Regarding the occurrence and prognosis of the condition under consideration, *Foulkrod* makes the astounding statement that pregnancy and typhoid are to be considered as a mixed infection, stating that the human parasite is as much a menace to the life of the patient as would be any other parasite.

To quote from his article: "After the growth and formation of the placenta, when the embryo becomes the fetus, the blood of the mother generates in the serum antibodies, which antagonize the infection of the syncytial tissue and as the fetus grows older the blood becomes more and more resistant to infection. In a typhoid infection occurring in a pregnant woman before the fourth month the typhoid fever will prove the predominant infection, will develop a higher temperature than at a later date, and the patient will, in 85 per cent. of cases, abort." . . .

"In a typhoid infection occurring later than the sixth month, the pregnancy will prove the stronger infection, the course of the fever will be greatly modified and at times be held in abeyance."

He believes that the great fetal mortality in the early months is

due to high fever in the mother and to infection in the child, which dies while the mother survives.

Foulkrod questions as to whether or not the pregnant woman does not generate some immunizing bodies which protect her from the typhoid infection.

Winckel considers typhoid fever in pregnancy a rare occurrence; he has seen the association but three times and believes that the prognosis for the mother is but slightly more grave than under ordinary conditions, but that the pregnancy will be interrupted in more than half the cases.

Jaggard states that the maternal prognosis depends largely upon the stage of pregnancy in which the disease occurs, believing that the later in pregnancy the more serious the outlook for the mother. He asserts that where it occurs during the early months of pregnancy abortion is the rule.

The later literature contains very little on the subject under consideration and from that we deduce, as already suggested, that the former more frequent diagnosis of typhoid fever in pregnancy was an error, due to the fact that those types of puerperal fever which simulate typhoid were considered as the latter disease. With the modern laboratory methods the diagnosis has become clearer and the condition does not appear to occur as often. The greater mass of recent literature on the subject treats of clinical reports which do not bear directly on either the prognosis or diagnosis of the condition, and therefore, no direct references have been made excepting from such articles as seem to carry a definite opinion on the subject. Certain things, however, are deduced from the experience of the various writers and appear to be fairly clear.

First, that typhoid fever occurring during the pregnant state is extremely uncommon. Whether this is due to the age of the patient or to some immunity which is conferred on the pregnant woman is not clear.

Second, that the tendency to abortion and premature labor in this condition is very marked. Whether this is dependent on the high fever, on asphyxia, or on the production of typhoid fever in the fetus by direct infection through the maternal blood is not entirely settled. We know that typhoid bacilli may be demonstrated in the blood of a fetus delivered from a woman suffering with this infection, and to the reviewer it would seem most logical that this should be the common cause of the abortion or premature labor, namely, the inability of the fetus to survive the typhoid infection, and its subsequent expulsion from the uterus.

Third, that those pregnant women suffering from typhoid fever show a tendency to a higher mortality than in the non-pregnant state. This would also seem most natural, inasmuch as the pregnant woman has an extra strain thrown on her excretory organs by the pregnancy,

and the additional labor demanded of these organs by the typhoid infection would, of necessity, lower the patient's resistance and increase the mortality. To assert, as one author quoted in the foregoing has done, that typhoid fever in a pregnant woman is comparable to a mixed infection, regarding the fetus and placenta as a type of infection, seems almost too absurd to need refutation. When, however, typhoid fever does occur, the prognosis for the mother is more serious than when a similar condition takes place in the non-pregnant woman, and the chances of the survival of the fetus are reduced to a minimum.

Progress of Diagnosis and Prognosis

GENERAL METHODS OF EXAMINATION—SYSTEMIC AFFECTIONS—DISORDERS OF GENERAL METABOLISM—INFECTIOUS DISEASES

Colloids in the Urine—L. LICHTWITZ, Zeitschr. f. physiolog. Chemie, Vol. LXIV., p. 144.

The article is devoted to the relations of the colloids to the solubility of uric acid and urates. The urine contains colloids which are finely diffused by increased temperature. The solubility of uric acid and the urates is dependent upon the amount and diffusion degree of these colloids and the temperature and H+-ion concentration. In normal urine the entire uric acid is contained in a state of true solution.   WESTERN.

A Red Pigment in the Urine—L. DE JAGER, Zeitschr. f. physiolog. Chemie, Vol. LXIV., p. 110.

If hydrochloric acid and formaldehyde are added to urine a precipitate will be produced which consists of a combination of formaldehyde and urea and contains a red coloring substance. This pigment is not contained as such in the urine, but is probably a decomposition product or a formol compound of a preformed body. Its mother substance is contained in the urochrom solution prepared according to Garrod. The pigment shows a band in the spectrum which is nearly the same as that of urobilin; the pigment, however, does not seem to take its origin from urobilin.   WESTERN.

Detection of Urinary Levulose by Borchardt's Method—F. ROSENBERGER, Zentralblatt f. innere Medizin, 1910, No. 7.

Levulose is not the only urinary component giving Borchardt's reaction.   WESTERN.

Fermentation Method of Roberts the most simple Determination of Urinary Glucose—KOELENSMID, Tijdschr. voor Geneeskunde, 1910, No. 3.

Roberts' fermentation method is readily applied and, at the same time, is very trustworthy. Compared with polariscopic results the figures obtained by fermentation were always somewhat smaller; however, if acetone bodies were contained in the diabetic urine the fermentation results were higher than those obtained by the polariscope because the acetone substances turn the rays of polarized light to the left and influence, therefore, the end result. (The somewhat

lower figures obtained by fermentation in solutions in which no ace-
tone bodies were contained, must, undoubtedly, be ascribed to incom-
plete fermentation processes—Editor.)   WEBB.

Quantitative Estimation of Albumin in the Urine—A. F. MATTICE, Arch.
of Int. Med., March 15, 1910.

The phosphotungstic method is very much more accurate than
the Esbach test for a comparative quantitative estimation of albumin
in the urine. Tsuchiya's reagent should, therefore, supplant the Es-
bach solution. (See Archives of Diagnosis, Vol. I, pages 192 and
297.) The method can be relied on to indicate a slight rise or fall
in albumin output, which is not true of the Esbach. Readings are
not influenced by changes in temperature to the same extent as with
the Esbach. Foaming or floating of the precipitate is rarely seen,
and the precipitate settles much more evenly than with the Esbach
reagent. The solution is lighter than water and when added to urine
does not mix until shaken, but rises a clear supernatant fluid, en-
abling one to read the meniscus accurately at the R. mark on the
Esbach tube. Because of its low specific gravity the urine needs no
further dilution. The method can be used for large amounts of al-
bumin as well as for small amounts. Tsuchiya's reagent is applicable
in urines where albuminuria and glycosuria coexist. Phosphotungs-
tic acid in alcoholic solution is easily prepared, keeps well, and does
not stain hands or clothes as does the Esbach reagent. Normal
urines treated with Tsuchiya's reagent yield a slight precipitate.
                                                         WESTERN.

Systematic Examination of the Urine for the Rarer Albuminoid Bodies—
J. E. DALE, Jour. A. M. A., Jan. 15, 1910.

Author devises the following scheme of analysis for the detec-
tion of urinary proteins. It aims to classify broadly. Any examina-
tion for protein bodies presupposes chemically pure acetic acid and
clear urine; if the urine is turbid and the matter in suspension
passes through the filter-paper, it will be well to mix with the urine
a small quantity of magnesium carbonate in fine powder, allow the
mixture to stand for a few minutes, and then filter. (1) A portion
of the clear urine in a test-tube is acidified with acetic acid; a cloud-
ing indicates nucleoalbumin. If a precipitate forms, it should be
filtered. (2) A. A portion of the filtrate of No. 1 (or if this be
negative, the clear acidified urine) is added slowly to a portion of a
saturated solution of common salt, a precipitate may be any of the
following—any albumose (except deutero-albumose), histon or
globin. B. If a precipitate is not formed, the addition of urine is
continued until it is in excess of the salt solution; the upper third is
shaken and boiled; a clouding indicates serum albumin. C. If a pre-

cipitate is formed, it should be filtered, care being taken that the urine has not been added beyond the point at which it is saturated by the salt solution. The filtrate should be boiled. A clouding indicates serum albumin. D. If a positive reaction is had in A, a portion of the original urine is saturated first with saturated salt solution without adding acetic acid, to determine whether a precipitate is formed in neutral solution, and, second, to determine whether the body present is one of which loosely combined sulphur is a characteristic, using Boston's method. (3) A few drops of the original urine are added, a drop at a time, to a considerable quantity of clear water. Milky streaks in the track of the drops indicate globulin. (4) A. A portion of the original urine is acidified with acetic acid and filtered; the filtrate is then rendered faintly alkaline with ammonium hydrate and boiled for a few minutes, then filtered. The filtrate may contain peptone or deutero-albumose. B. The second filtrate from A is saturated with ammonium sulphate and boiled. A white precipitate indicates deutero-albumose (yellow or brownish ammonium urate). C. B is filtered and filtrate examined for peptone; if deutero-albumose has been found, the saturation with ammonium sulphate must be complete and the boiling decided to assure its separation.   WESTERN.

Excretion of Phosphates in Tuberculosis and Chlorosis—ZICKGRAF, Münchener med. Wochenschr., March 29, 1910.

According to Teissier the excretion by the urine of amounts of phosphates large in proportion to the intake is an early symptom of concealed tuberculous foci in the lungs. In chlorosis, on the other hand, the excretion of phosphates is diminished. Teissier maintains that these facts may be of service in making a differential diagnosis between these two conditions. The author confirms that larger amounts of phosphates are excreted in early tuberculosis and that smaller quantities of these substances are eliminated in chlorosis, but that the difference is too small to place on it reliance in regard to differential diagnosis.   . MILL.

Microscopical Detection of Digestible Cellulose in the Feces—J. AMANN, Rev. méd. de la Suisse Romande, 1910, No. 2.

Author employs a reagent composed of zinc chloride, potassium iodide, iodine and distilled water for the differentiation of digestible from undigestible cellulose; the reagent produces violet coloration of the digestible and brownish or yellowish coloration of the undigestible cellulose.   ZIMMER.

Prognosis of Carcinoma—L. BRIEGER, Berliner klin. Wochenschr., Feb. 14, 1910.

The amount of antitrypsin in the blood (if the clinical picture

has been duly taken into consideration) permits of diagnostic and prognostic conclusions in cachectic conditions, especially in cancer.

MILL.

Glycogenic Reaction in the Blood—W. H. BROWN, The Practitioner, Jan., 1910.

An analysis of the author's observations of the glycogenic reaction in the blood in some four hundred cases leads him to believe that the intra-cellular change which takes place in the neutrophilic leucocytes in certain pathological conditions, is indicative of an increased cellular activity, and is an expression of the resistance of the body to toxic agents, whether bacterial or not. The appearance of iodophilia seems to be a manifestation of an increased functional activity of the leucocytes. It is usual to find the degree of iodophilia and leucocytosis proportional to the severity of the infection. In regard to the value of the reaction as compared to that of the leucocytosis, the author does not agree with those who affirm that the glycogenic reaction is the much more delicate test of the two. The intensity of the reaction will vary like the leucocytosis with the etiological factors associated in its production, i.e., the kind of infecting organism, its virulency, and the mode of infection. The reaction will therefore be found occasionally of little use for diagnostic purposes.

SACHS.

Detection of Indol in Bacterial Cultures by Ehrlich's Method—E. CROSSONINI, Archiv f. Hygiene, Vol. LXXII, 1910, No. 2.

Comparison of Salkowski's indol reaction (potassium nitrite + sulphuric acid) with the method of Ehrlich (addition of paradimethylamidobenzaldehyd + hydrochloric acid + absolute alcohol). It was found that the method of Ehrlich was much more sensitive than the older method. The indol reaction ensued already after from two to four hours. The old method produced hardly a reaction in pure solutions of 1 : 200.000, while Ehrlich's method called forth distinct red coloration in solutions of 1 :100.000.0: At the zone of contact a red ring appeared already in a solution of 1 :500.000.0. The new reagent may be also employed for quantitative estimation.

FRY.

Urea Determination of the Cerebro-Spinal Fluid in the Diagnosis and Prognosis of Uremia—M. J. FROMENT, Lyon médical, 1910, No. 6.

In all cases of uremia the cerebro-spinal fluid contains large amounts of urea. This fact may be utilized in the diagnosis of doubtful cases, as the demonstration of urinary albumin does not always point with certainty to the presence of uremia. Exact urea

determinations have shown the following results: If the cerebro-spinal fluid contains one gram or more of urea uremia *may* be present. (Such amounts of urea occur also in arteriosclerosis and nephritis.) If the cerebro-spinal fluid contains 4 grams or more of urea the presence of uremia *cannot be doubted.* The urea contents of the blood are often analogous to that of the cerebro-spinal fluid; however, there may exist distinct discrepancies. For this reason the determination of the urea of the cerebro-spinal fluid is always to be preferred.   ZIMMER.

Value of the Wassermann Reaction in Surgical Diagnosis, with especial Reference to the Modification of Stern-Kreuter and Pöhlmann, Deutsche Zeitschr. f. Chirurgie, Vol. CII., Nos. 1 to 3.

The positive reaction of the complement fixation method in syphilis is also of great value in surgical diagnosis. The modification of Stern is a practical simplification of the Wassermann method, but in the employment of the original as well as the modified method decreasing amounts of antigen must be employed.   MILL.

Hecht's Modification of the Wassermann Reaction—KÖNIG, Deutsche med. Wochenschr., March 17, 1910.

A modification of the original Wassermann method is justifiable if the following three conditions are present, (1) there must be a scientific basis for the modification, (2) it must be more simple and sensitive as the original method, (3) it must never yield misleading results. Hecht's modification possesses these qualifications. It is based upon the fact that normal human serum is able to dissolve ten times its amount of 2% sheep's blood. Thus, only active serum, 2% sheep's blood and antigen are necessary for the modification. It yields very good and trustworthy results if fresh sera only are examined, and if the dosis of the employed antigen is sufficiently small.
                                                    MILL.

Use of the Ultra Microscope for the Early Diagnosis of Syphilis—H. W. BOYLY, The Practitioner, Feb., 1910.

The advent of the paraboloidal immersion condenser and the reflecting immersion condenser, popularly called the "ultra microscope," has given the profession a simple, rapid and certain method of demonstrating the living treponema pallidina in the scrapings from a suspected sore or papule. In the differential diagnosis between the treponema pallidina and other spirochetes, the following organisms must be held in mind: Spirochæta refrigerans, found in the mouth, superficial sores, etc., spirochæta buccalis found in the mouth and spirochæta balanitidis found in balanitis. These three organisms are much larger and looser with wider and more open spirals and are much more active in their movements than the

spirochæta syphilitica. The only spirochætæ so far described which resemble greatly the specific organism of syphilis are: (1) Spirochæta dentini, found in carious teeth, shorter (5-10 microns) than spirochæta syphilitica and 5 to 15 spirals. The wave length is about the same as that of treponema pallidina, but the depth of the wave is considerably less; (2) Spirochæta pertenuis of Yaus, described by Castellani in which the ends are often twisted into rings or loops; (3) Spirochæta pseudo-pallida of ulcerated cancers, described by Löwenthal, as possessing less deep and regular spirals.   SACHS.

The Blood in Graves' Disease—N. Róth, Deutsche med. Wochenschr., Feb. 10, 1910.

In most cases of Graves' disease author found diminished amounts of hemoglobin, normal or somewhat increased amounts of erythrocytes, leucopenia, lymphocytosis, and mononucleosis; the latter continues to prevail in intercurrent febrile processes, but the lymphocytosis disappears.   MILL.

Transitory Glycosuria—H. L. RICHARTZ, Zentralblatt f. innere Medizin, 1910, No. 13.

Report of a case of transitory glycosuria which seemed to have arisen on the basis of a catarrhal inflammation of the intestinal mucosa. The amelioration of the diarrhea, which had existed for some weeks, was followed by the complete disappearance of the glycosuria. Tolerance for starch was normal, but alimentary glycosuria after ingestion of from 30 to 50 grams saccharose remained. Author opines that the glycosuria in his case was called forth by an affection of the duodenum and the small intestine. The entire upper portion of the small intestine, according to recent investigations, is apparently the seat of an important factor in carbohydrate metabolism.   WESTERN.

Early Diagnosis of Graves' Disease—T. KOCHER, Korrespondenzblatt f. Schweizer Aerzte, Vol. XL., No. 7.

Graves' disease is a hyperthyreosis, but not every hyperthyreosis is Graves' disease. Important early symptoms are that of Dalrymple (marked retraction of the upper lid), that of Kocher (spasmodic retraction of the upper lid when a fixed point is rapidly moved upward and downward), the tremor, tachycardia, pressure sensitiveness of the thyroid gland, decrease of leucocytes, especially of neutrophile cells, and retarded coagulation of the blood. MILL.

Clinical Picture of Infantilism and Hypoplasia—A. MAYER, Münchener med. Wochenschr., March 8, 1910.

A thorough study of all the points pertaining to infantilism. Certain anomalies of the abdominal viscera, especially congenital

ptosis of the kidneys, are very likely due to developmental disturbances. Author draws attention to the relation of Graves' disease to genital hypoplasia. There seems to exist a connection between Graves' disease and the ovaries. The disturbance of thyroid function attracts our attention; thyroid activity exerts a powerful influence upon the development of the body constitution, it stands in close rapport with the function of the female genitalia, and plays a great rôle in the condition known as infantilism.   MILL.

Exudative Diathesis, Scrophulosis and Tuberculosis—A. CZERNY, Jahrbuch f. Kinderheilkunde, Vol. LXX, No. 5.

The syndrome of exudative diathesis is altogether different from that of tuberculosis, but it is analogous to that of non-tuberculous scrophulosis. The primary causes of the disease consist of a congenital defect of the chemism of the organism, especially of such tissues which are involved in the great fluctuations of the bodily water contents.   MILL.

The Bacteriemia Theory of Tuberculosis,—a Refutation—J. McFARLAND, E. B. HOLMES, E. J. G. BEARDSLEY and E. A. CASE, Jour. A. M. A., Feb. 19, 1910.

An experimental refutation of Rosenberger's conclusion that tuberculosis is primarily a bacteriemia. Authors feel constrained to believe that Rosenberger has been the unfortunate victim of a mistake, the peculiar character of which it was exceedingly difficult to discover. They believe that the presence of "water bacilli" (see "Investigation of blood for tubercle bacilli," by W. V. Brem, abst. Archives of Diagnosis, Vol. II, p. 416) in the preparation explains most of the cases in which what were supposed to be tubercle bacilli were found in the blood or feces, and that the use of the Pappenheim reagent explains the remainder; that in consequence there is every reason to believe that tubercle bacilli do not often circulate in the blood in quantities capable of ocular demonstration; and that the deductions made by Rosenberger are unsupported by reliable evidence.
        WESTERN.

Diagnosis of Tuberculosis by Tuberculin—W. C. WILKINSON, The Practitioner, Feb., 1910.

The value of tuberculin in the diagnosis of tuberculosis is not limited to the minority of cases in which there are neither definite symptoms nor signs. Its value is often great when there are definite symptoms and signs. By the use of tuberculin, the author has been able to exclude tuberculosis and to pronounce in favor of hydatid disease of the lungs, especially when there are constantly recurring hemorrhages. In bronchitis, even localized bronchitis due to influ-

enza bacilli, pneumococci and streptococci, tuberculin may be used for diagnosis when the fever has passed away.   In children and adults localized caseous deposits, small enough to escape detection, and perhaps causing no obvious signs or symptoms, may suddenly break down and burst into the bloodvessels, causing generalized tuberculosis, or into the air passages, causing acute tuberculous broncho-pneumonia.   Such lesions may be early recognized by the use of tuberculin.   Tuberculin is invaluable in the early stages of pulmonary tuberculosis when the symptoms are related to other organs, as heart and bloodvessels and blood, to the digestive organs, especially the stomach, and even muscles, nerves, bones and joints. By using tuberculin we may correct the wrong diagnosis of those who trust to the superficial evidence of physical signs.   SACHS.

Phthisis in Old Age—R. STAEHELIN, Berliner klin. Wochenschr., Feb. 28, 1910.

In elderly patients there often exists a cachectic state that supposedly is due to a carcinoma, but as evinced by necropsy, pulmonary tuberculosis has often been the disease they suffered from. In other cases the patient's malady is diagnosed as cardiac weakness or emphysema, but the autopsy demonstrates that tuberculous changes had also supervened.   As a matter of fact, phthisis in old age is not sufficiently considered by modern text-books on medicine. Senile phthisis is not characterized by febrile temperature elevation; in all chronic affections of the aged occurring with subfebrile temperature, phthisis should be kept in mind.   Anorexia and subsequent emaciation are prominent symptoms.   Percussion in old age does not yield very distinct results.   Dulness is frequently little pronounced.   The respiratory sound over severely affected areas is often changed but very little.   Expectoration is frequently very scanty. The sputum must be examined for tubercle bacilli in a more careful manner than if it were derived from young people.   MILL.

Study of the Cerebro-Spinal Fluid in the Infective Diseases of the Meninges—A. CONNAL, Quarterly Jour. of Med., Jan., 1910.

In the acute pyogenic and the tuberculous forms of meningitis, the progress of the infection is indicated by changes in the cerebro-spinal fluid, and a proper interpretation of the observations is of great value in prognosis and diagnosis.   In meningitis from any cause, the normal transparency of the cerebro-spinal fluid is lost. Organization and absorption of the inflammatory materials are indicated by a clearing up of the fluid.   An extension of the disease is always accompanied by an increase of the turbidity.   The fluid in tuberculous meningitis never becomes turbid, and the great majority of the samples of the spinal fluid are nearly clear in appearance. The fluid in tuberculous meningitis is always colorless unless there has

been some admixture with blood. The majority of the fluids possess very little viscosity even when considerable turbidity is present. Actual pus is comparatively rarely met with. The coarse-cob web variety of coagulum is never found in tuberculous meningitis. When the amount of albumin decreases during the course of the illness it is a hopeful sign. The absence of reducing sugar is pathognomonic of cerebro-spinal meningitis. In tuberculous meningitis sugar is very rarely entirely absent from the fluid. Endothelial cells indicate the presence of meningitis.   SACHS.

Histological Diagnosis of Rabies—G. VOLPIUS, Zeitschr. f. Hygiene u. Infektionskrankheiten, Vol. LXV., 1910, No. 1.

On the hand of thirty-seven cases of rabies in which the Negri bodies were found in every instance, the author maintains that the histological examination suffices for the recognition of the condition. It is sufficient to fix a small piece of tissue in 1% osmic acid for a few seconds, to wash it for half an hour, and to harden it in alcohol for some hours. The Negri bodies are readily recognized by their dark color.   FRY.

Simplification of Neisser's Method of Staining Diphtheria Bacilli—P. SOMMERFELD, Deutsche med. Wochenschr., March 17, 1910.

A solution of methylene blue is placed upon the dried and fixed preparation, rinsed off or dried, nearly discolored in formalin alcohol, again rinsed off and dried. Counterstaining is unnecessary.   MILL.

Scarlatinoid Rubeola—J. BAZAUNIKOW, Archiv f. Kinderheilkunde, Vol. LII., No. 1.

Author had occasion to observe during an epidemic of mild scarlatina the resemblance of the scarlatinal eruption and that of scarlatinoid rubeola. He also noticed the typical extension of the eruption from above downward, the slight temperature elevation and the moderate increase of pulse frequency. Besides these characteristics there were also observed the short duration and mildness of the pathological process, early desquamation, absence of a noticeable influence upon the kidneys and the occurrence of the eruption in individuals who already had had scarlet fever.   MILL.

Repeated Attacks of Scarlet Fever in the Same Individual—H. WEISSENBERG, Archiv f. Kinderheilkunde, Vol. LII., No. 1.

Author concludes on the hand of seven cases that there exist individuals in whom the occurrence of scarlatina at one time directly increases the disposition to recurrences of this infection.   MILL.

Scarlatina mitigata—E. Benjamin, Versammlung Deutscher Naturforscher u. Aerzte, Zentralblatt f. Kinderheilkunde, March, 1910.

Observations on twenty cases of scarlatina which ensued in children affected with diphtheria. The disease started on the fourth or fifth day in nearly every case. In the presence of uncomplicated tracheal diphtheria the scarlatinal process ensued with moderate temperature elevation lasting but two or three days, and was characterized by very little eruption and angina. Vomiting did not occur. The disease was genuine scarlet (desquamation, infection of brothers and sisters, subsequent serum exanthema). Author does not believe that the preceding diphtheria was the cause of the peculiar type of scarlatina, but is of the opinion that the serum injections exerted some influence upon the production of the scarlatinal process.   Mill.

Syndrome of Scarlatina Vaccination (Vaccinal Scarlet)—G. E. Wladimi-roff, Archiv f. Kinderheilkunde, Vol. LII., No. 1.

The course of vaccinal scarlet is much more rapid than that of the genuine form. After a few hours already the exanthema manifests itself over the entire body. The raspberry tongue exists already on the second day. Desquamation does not occur.   Mill.

Rheumatic Inflammation of Serous Membranes (Polyserositis Rheumatica)—E. Mosler, Berliner klin. Wochenschr., Feb. 14, 1910.

Acute pericarditis and pleuritis are frequently observed in the wake of pronounced articular rheumatism and in rheumatic individuals in whom the articular involvement is of lesser importance. Pleuritis and pericarditis suddenly appear simultaneously. Dyspnea and orthopnea are due to dry pericarditis. Generally there exists a dry pericarditis together with bilateral pleural effusion. In some of the cases pleurisy and pericarditis are complicated by endocarditis which may supervene synchronously or later. Myocarditis has been present in all cases. The pleurisy subsides generally without aspiration even when the effusion is considerable. Rheumatic pericarditis also subsides without leaving any marked injury.   Mill.

Two rare Complications of Acute Articular Rheumatism—R. Dufour, Rev. méd. de la Suisse Romande, 1910, No. 2.

Two interesting cases complicating rheumatic fever. Case I. A girl, 16 years old, exhibited manifestations of acute articular rheumatism. The joints were very much swollen, the pains were violent. The acute phenomena abated after administration of salicylates. After a few days restlessness ensued suddenly; patient became more and more excited. Lethal termination occurred in violent delirium. Duration of the acute stage of exaltation lasted about eight hours. Case II. A woman, 35 years old, showed symptoms of acute articular

rheumatism. Administration of salicylates caused decrease of pains and of articular swellings. After five days there ensued sudden outbreak of delirium tremens, which latter caused lethal termination in a short time. ZIMMER.

Cutaneous Reaction in Leprosy—O. TEAGUE, Philippine Jour. of Science, Oct., 1909.

Since the leprosy bacillus bears more resemblance to the tubercle bacillus than to other pathogenic organisms, extracts were prepared in a similar way as in the preparation of old tuberculin. Four different extracts were made as follows: first, from nodules taken from living lepers, second, from the nodulous skin of a dead leper, third, from the spleen of a dead leper, fourth, a control from the skin of a cholera corpse. The material thus obtained was cut into small pieces or ground in a mortar in case of the spleen, and extracted in 5 per cent. glycerine. It was then heated on the water bath until the volume was reduced to about one-tenth of the original. Fifty lepers were vaccinated with these extracts, a control vaccination with the extract of skin from the cholera case being made in each instance. In two or three cases there was a doubtful reaction, but otherwise the vaccinations were in all respects like the controls. Further attempts will be made to secure a more concentrated extract of the leprosy bacilli. WESTERN.

RESPIRATORY AND CIRCULATORY ORGANS

The Early Physical Diagnosis of Pulmonary Tuberculosis—GOLD-SCHEIDER, Zeitschr. f. klin. Med., Vol. LXIX., No. 4.

A discussion of the author's method of apex percussion. Light percussion is better adapted to penetrate deeply than heavy percussion. When percussing lightly the various degrees of dulness are better audible. It is wrong to believe that heavy percussion will elicit dulness in the deeper situated regions. The apex of the lung is best percussed between the two heads of the sternocleidomastoidei. It is useless to percuss over the supraspinal fossa; the apex is best located on the posterior surface of the thorax while the patient, who is in sitting posture, extends his arms far to the front and also to the sides. Percussion of the axilla is very important. Percussion is of greater service in the early recognition of pulmonary tuberculosis than is auscultation. The article abounds in important details and must be studied in the original. WESTERN.

Pulmonary Hernia—J. URBACH, Deutsche Zeitschr. f. Chirurgie, Vol. CII., Nos. 1 to 3.

Description of a case of pulmonary hernia in a man 34 years

old. It resulted from exertion on lifting; as a contributary cause author mentions an emphysema of long standing. The hernia was of the size of a pigeon egg, was soft, compressible and gave pulmonary resonance. The protrusion was located para-sternally in the second left intercostal space.   MILL.

Value and Proper Method of Performance of Auscultatory Percussion of the Heart—W. F. MILROY, N. Y. Med. Jour., March 19, 1910.

(1) Place the stethoscope in such a position that it does not rest upon a rib percussed. (2) Let the pleximeter finger follow an intercostal space. (3) Let the pleximeter finger make uniform pressure at each point where percussion is made, and (4) to that end and also to abolish the effect of the cushion of adipose tissue in fat subjects, let this pressure be so firm that both ribs bounding the space percussed shall be distinctly felt by the pleximeter finger. (5) Let the percussion stroke be of very moderate intensity. (6) Regard the point at which the first appreciable change in the character of the percussion sound is observed as representing the location of the heart. A few conditions exist in which this plan, along with all other methods of percussion, utterly fails to indicate the size of the heart. Of these the most frequently encountered is advanced emphysema. Extreme ossification of the costal cartilages may also interfere. A voluminous female breast is an impediment. Furthermore, the following conditions may stand in the way of success: Severe acute emphysema; extensive fibrosis of lungs, pleura, and pericardium; pneumothorax; extensive serous or purulent effusion into the chest cavity; extreme gaseous distension of the stomach.   WESTERN.

Function of the Peripheral Blood Vessels in the Presence of Non-Compensated Circulation—M. FRANKE, Wiener klin. Wochenschr., 1910, No. 10.

The peripheral vessels act as suction pump and also as pressure pump harmonically together with the heart. Non-compensation of the circulation may be called forth by bloodvessel disturbance. Circulatory disorders produced on account of cardiac weakness may be compensated for by the bloodvessels.   MILL.

Dilatation of the Heart—W. T. MULLIGAN, N. Y. State Jour. of Med., April, 1910.

The symptoms of cardiac dilatation are: Increased size of the heart, alterations in the character of the movements of the heart and murmurs, failure of circulation in the remote organs and tissues, producing dropsy, enlargement of the liver and breathlessness, and hyperalgesia affecting the skin over the heart and muscles of the left chest and axillary fold. If the heart responds well when digitalis is administered, the prognosis is quite favorable, even if

there is great dilatation; if the heart does not react to treatment, even with slight dilatation, the prognosis is unfavorable, more particularly so in heart failure with dilatation in advanced arteriosclerosis.   WESTERN.

Importance of Optic Neuritis and Retinal Hemorrhages in the Diagnosis of Chronic Septic Endocarditis—A. W. FALCONER, Quarterly Jour. Med., Jan., 1910.

Author has examined within the last three years some fifteen cases of chronic, septic endocarditis, in five of which optic neuritis, accompanied in four by recurrent retinal hemorrhages, was present. In at least two of these cases the presence of optic neuritis on the first examination rendered the diagnosis of septic endocarditis probable, when it was not otherwise very obvious. In all of these five cases there was definite optic neuritis, affecting both eyes in the four cases in which it was possible to examine the two eyes. In none of the cases did the patient admit of any failure in vision. In order to exclude retinal hemorrhages the fundus must be repeatedly examined, as the hemorrhages come and go and leave no trace of having been present, just as do many of the skin manifestations of malignant endocarditis. In regard to the value of optic neuritis and retinal hemorrhages in the differential diagnosis of chronic septic endocarditis, author is of the opinion that their main value lies in the hint they give as regards the seriousness of the condition.

SACHS.

Elements of Prognosis in Chronic Valvular Disease of the Heart— R. ABRAHAMS, N. Y. State Jour. of Med., April, 1910.

The prognosis in heart disease, no matter what and where the lesion is, can never be given with arithmetical precision. The best that one can do when one is pressed for an opinion, is to say, from existing conditions, whether the end is near or far. The prognosis should always be couched in approximate terms. The healthy heart is endowed with tremendous *reserve power,* rendering it equal to all occasions of exercise and exertion, sickness and excesses. In order to properly estimate the value of the resisting power in prognosis two elements are essential, viz., *heredity* and *anemia.* The state of the *heart muscle* demands careful study in the prognosis of valvular disease. The condition of the *arterial system* is another important prognostic element. *Etiologic influences* on prognosis have to be taken into due consideration. Articular rheumatism, influenza, syphilis, typhoid fever, diphtheria, measles and scarlet fever are all of more or less importance as etiological factors of cardiac disease, and consequently also in its prognosis. Among *associate diseases* which play an important rôle in the prognosis are pulmonary tuberculosis, emphysema and pericarditis. The aid derived from behavior of the

pulse in the prognosis of heart disease cannot be overestimated. *Age* as an element in prognosis could be formulated as follows: Mitral disease is the rule of childhood, the balance is in favor of the type of insufficiency. In the great majority of cases the prognosis for a long life is unfavorable. .Valvular defects occurring in adolescence and up to the age of thirty give a better prognosis in some, but not in all forms. Mitral insufficiency is more favorable than stenosis, and the two are better than aortic insufficiency. Lesions developing between thirty and fifty do not necessarily give a bad prognosis. *Sex* is no small factor in prognosis. The most dangerous time for a female child with valvular disease is the period of puberty.

<div align="right">WESTERN.</div>

The Heart in Pulmonary Tuberculosis—J. HAY, Liverpool Medico-Chirurgical Jour., Jan., 1910.

An appreciation of the rôle of the circulatory apparatus in pulmonary tuberculosis is of some moment in the diagnosis, prognosis and treatment of this condition. It is recognized that there exists some antagonism between valvular disease of the heart and tuberculosis of the lung. The toxic effects of pulmonary tuberculosis on the heart are very important, both in diagnosis and prognosis. One striking effect of the toxemia is its influence on the frequency of the heart's action. A tachycardia is sometimes one of the first indications of tuberculous infection, and it possibly may happen that it is only after observing the patient for some months that the true significance of the tachycardia is revealed, and the exciting cause manifests itself by local signs. The toxemia may affect the respiratory center producing tachypnea. Early tachycardia and .tachypnea may be unaccompanied by any elevation of temperature, and the combination of these two conditions and a normal or subnormal temperature justifies a very gloomy prognosis. The tachycardia may only be temporary, brought on by slight causes as a motion, eating in the presence of a full stomach or mild exercise. Cardiac arrhythmia is rarely met with, but transient flushings and blotchiness of the skin with ready and profuse sweatings are not at all uncommon. There is, as a rule, some lowering of the blood pressure. Where there is an extensive tuberculous involvement of lung tissue, there may be a mechanical interference with the work of the right ventricle. Due to the extensive involvement of the lung tissue, a considerable proportion of the capillary bed is destroyed and an actual stenosis is produced in the pulmonary circulation. Extra work falls on the right ventricle, producing hypertrophy and dilatation.

<div align="right">SACHS.</div>

Paroxysmal Tachycardia and Arrhythmia of Tuberculous Origin—J. BERTIER, Lyon médical, 1910, No. 8.

Clinical histories of three cases, two of which exhibited distinct symptoms of paroxysmal tachycardia and one those of paroxysmal arrhythmia. The tuberculous affection influences cardiac activity through the pneumogastric. ZIMMER.

Cardiac Disease and Psychosis—L. SAATHOFF, Münchener med. Wochenschr., March 8, 1910.

Cardiac diseases are of great importance as regards the etiology of psychoses. The relation between the two affections is manifold. In certain cases the cardiac disease seems to be the principal affection, while the mental disturbance is mild and evanescent in character; in other instances the psychosis overshadows the cardiac disease to such an extent that but a minute clinical analysis reveals the underlying cardiac ailment. A chronic cardiac affection without complications, especially simple, well compensated valvular disease, does not particularly predispose to mental disturbance. Acute psychoses, on the other hand, occur comparatively frequently in the course of cardiac affections. The original cardiac disease may be acute or chronic. If the cardiac disease is of a chronic nature, an aggravation or disturbance of compensation which is followed by the psychosis, can be demonstrated in nearly every instance. MILL.

ALIMENTARY TRACT

The Early Symptoms of Upper Abdominal Disease—J. B. DEAVER, Jour. A. M. A., Jan. 29, 1910.

A very complete article dealing with the early symptomatology of affections occurring in the upper abdomen. It cannot be done justice by abstracting.—The initial symptoms of all of the surgical diseases of the organs of the upper abdomen are in many ways very much alike. Thus, for instance, there occurs dyspepsia in early disease of the stomach, duodenum and gall bladder. It varies somewhat, however, in type when accompanying the different lesions. A confusing factor in making a diagnosis is to be found in the presence of adhesions. Adhesions of the upper abdomen generally caused by an inflammatory process of low grade may involve any or all of the organs of this region, i.e., the biliary tract, stomach and colon, etc. It is but frank to say that in our present state of knowledge a certain diagnosis of gastric carcinoma in its incipiency is an impossibility. Yet we need not wait for terminal symptoms. It is far better to operate on an uncertain diagnosis than to allow the patient to pass the boundaries of our power to help him. The Cammidge reaction is of no value in the diagnosis of acute pancreatitis. More attention to the details of the symptomatology will no doubt enable

us to distinguish most cases of acute pancreatitis from acute ileus,
with which it is most often confused.   WESTERN.

Acute Dilatation of the Stomach—E. WALKER, Lancet-Clinic, Jan. 8, 1910.

The symptoms of acute gastric dilatation may come on im-
mediately after an injury or surgical operation, but more frequently
appear from the second to the fourth day, in exceptional cases after
a longer period; one as long as the thirtieth day is recorded. Vomit-
ing is the first symptom, and at the beginning is such as is often
noted after anesthesia. It gradually increases in severity, and the
quantity ejected is large, even as much as one or three gallons in the
twenty-four hours. The character is like paralytic gastrorrhea—
thin, yellowish or greenish aromatic material, containing hematin and
bile; the latter and pancreatic fluid may be present in large quanti-
ties. The odor is offensive, but not feculent. Epigastric or um-
bilical pain or distress usually comes later; the bowels are consti-
pated, but movements may occur early. The quantity of urine is
much diminished. Hiccough is a prominent symptom in some cases.
The distension of the abdomen begins in the epigastrium and extends
downward, and when extreme is more to the lower abdomen and
to the left, while the right hypochondriac region is flat. The per-
cussion note is not as tympanitic as in obstruction, and is flatter in
the lower abdomen. There is a distinct splash, and by it the location
of the greater curvature may be made out. There is great thirst, and
the aspect of the patient indicates grave disease. The pulse becomes
rapid and weak, while the temperature may be subnormal. It is usu-
ally from 100 to 101 deg. F. The differential diagnosis is from ob-
struction and peritonitis with gaseous distension. Prognosis is not
so bad as formerly supposed. Mortality has been between 72 and
85 per cent. More recently it is much less, and with the early rec-
ognition, prompt lavage and proper posture, this mortality will be
greatly reduced.   WESTERN.

Acute Dilatation of the Stomach—S. R. HOPKINS, Am. Jour. of Surgery,
Jan., 1910.

Vomiting occurs nearly always, and if the acute gastric dilata-
tion follows an operation it begins at the end of a day or so after-
wards, when the post-anesthetic vomiting has, as a rule, ceased. The
vomitus is first yellowish, later becoming greenish and black in color,
of foul, though rarely fecal odor, very large in amount, and expelled
without much nausea or straining. Obstipation is the rule. The
thirst is extreme and very agonizing. The urine is much dimin-
ished in quantity, and, as in other forms of ileus, a delirium at times
precedes the exitus. The striking features are early, intractable,
pernicious and copious vomiting, thirst, profound collapse, and ab-

dominal distension corresponding to the extent of the gastric dilatation. The diagnosis can be rendered clear by the insertion of the stomach tube, when the enlargement of the abdomen can be demonstrated as being due to the enormously dilated stomach, which in some instances extends as low as the symphysis pubis.

<div style="text-align: right">WESTERN.</div>

Grave Digestive Insufficiency in Children beyond the Nursling Period— O. HEUBNER, Jahrbuch f. Kinderheilkunde, Vol. LXX., No. 6.

A clinical picture well known to the pediatrist but never succinctly described. An affection of the better situated classes of the population beginning in the second or third year of life in children who heretofore had thrived well. The course is essentially chronic, and recurrences are common. The disturbance consists in the inability to digest fat; in severe cases insufficient carbohydrate digestion is also present. The result of the digestive insufficiency is undernutrition. Diarrhea alternates with constipation. The clinical picture resembles very much that of infantile atrophy.   MILL.

Recognition of Non-Perforating Duodenal Ulcer—WILMS, Münchener med. Wochenschr., March 29, 1910.

The presence of a duodenal ulcer cannot be recognized by an external examination in the great majority of instances. It is absolutely necessary to examine the duodenum from the inside to determine whether one is confronted with an ulcerative process, of what extent it is and where situated, and whether there exist two or more ulcers. Author examines with the finger which is introduced through the pylorus of the incised stomach.   MILL.

Angina Abdominalis—S. KREUZFUCHS, Deutsche med. Wochenschr., Feb. 17, 1910.

A syndrome which is the result of the calcification of the abdominal vessels; it is manifested by paroxysmal violent epigastric pains, colic and much distended abdomen. The affection ensues frequently in excessive smokers, and is often the terminal condition of a chronic, distressing disease.   MILL.

Diagnostic Importance of Occult Gastric and Intestinal Hemorrhages— L. KUTTNER (31st Congress of the Balneological Society, Berlin, Jan. 28 to Feb. 1, 1910), Münchener med. Wochenschr., March 8, 1910.

We can only speak of occult hemorrhages if the stomach or intestine can be considered as their source, and if we are positive that the blood has not been derived from the nose, mouth, esophagus or lungs. Esophageal hemorrhages are often mistaken for occult gastric or intestinal hemorrhages. Functional disturbances may occa-

sionally call forth occult hemorrhages. Chronic anacid gastritis may give occasion to occult hemorrhage. The fact of the occurrence of the latter can, therefore, be employed in the diagnosis of carcinoma only in those cases when the occult blood has been repeatedly found, and when the other clinical findings are not contradictory. On the other hand, if in the presence of well maintained motility blood is neither encountered in feces nor the stomach carcinoma does probably not exist; however, it must be remembered that gastric carcinoma does not always cause bleeding, and that scirrhus gives very rarely occasion to hemorrhage. In the presence of pyloric carcinoma when blood enters directly into the intestine, blood will be found in the feces, but not in the gastric contents. Occult hemorrhages are observed in the first and second weeks after operations for appendicitis or gall bladder affections. In the nursling occult hemorrhages are important on account of their possible duodenal origin. Intestinal hemorrhages ensue also in varicoses of the jejunum, diverticula of the small intestine, tuberculous ulcers and in necrotic inflammations resulting from dysentery, diphtheria, and uremia.   MILL.

Viscosimetry of the Blood in Acute Surgical Diseases, especially in Acute Perityphlitis—F. OEHLECKER, Berliner klin. Wochenschr., March 28, 1910.

The observations were made on 260 patients, 121 men and 139 women. The viscosity of the blood is dependent upon the red cells and the hemoglobin contents, also upon the viscosity of the serum itself. The viscosity of the blood in normal man is subject to certain fluctuations due to sex, age, constitution, etc. Nutrition, ingestion of liquids, movements, warm baths, administration of potassium iodide, the CO_2 contents of the blood also exert a certain influence upon the viscosity degree. Viscosity of the blood of men is generally somewhat greater than that of women. The average figure for men is 4.72; for women it is 4.38. The newly-born exhibits a high degree of blood viscosity. Author found in 14 examinations of the blood of newly-born, who had as yet not been fed, a viscosity amounting to from 7 to 10.4. Such high figures are hardly met with in pathological conditions. This high blood viscosity decreased to 5 after from eight to fourteen days. In acute surgical diseases of the abdominal cavity a low viscosity points to hemorrhage; acute peritonitis causes increase of the viscosity. In acute perityphlitis viscosimetry of the blood, like every other method, does not give exact information about the pathologico-anatomical state of the affected appendix. As a general rule, however, the viscosity degree is an indicator of the extent and intensity of peritoneal involvement. The highest figures were obtained in cases of perforation peritonitis which terminated fatally after the operation. Viscosity of the blood has, therefore, also some prognostic importance.   MILL.

Acute Primary Typhlitis—W. Röpke, Archiv f. klin. Chirurgie, Vol. XCI., No. 1.

Most inflammatory processes in the right iliac fossa originate in the appendix, rarely in the cecum. The existence of typhlitis stercoralis cannot be demonstrated with certainty. Typhlitis is produced by infection from the intestine or via the blood and lymph channels. A definite differentiation between typhlitis and appendicitis cannot be accomplished; the clinical manifestations of both affections are entirely analogous.   MILL.

Appendix Dyspepsia—B. G. A. Moynihan, British Med. Jour., Jan. 29, 1910.

The symptoms of both gastric and duodenal ulcer, especially the former, may be exhibited with great fidelity in cases where no structural lesion can be found in these parts. In many of the cases of "gastric ulcer" in which the symptoms pain, vomiting, hematemesis are present, and in many cases of intractable dyspepsia of a capricious kind, the only pathological change discovered during operation is a chronic inflammation of the appendix. Removal of the inflamed and obstructed appendix is generally followed by a complete and instant relief of all former dyspepsia.   SACHS.

So-called Primary Carcinoma of the Appendix—R. Milner, Deutsche Zeitschr. f. Chirurgie, Vol. CII., Nos. 1 to 3.

Critical review of the cases of so-called primary carcinoma of the appendix. The larger tumors which have been described as colloid cancers have not definitely been shown to be of carcinomatous nature; their origin from the cecum has also not been proved in some instances. The histological findings of the small tumors, which are mostly situated on the apex, are entirely different from those of intestinal carcinoma. Author believes that they are inflammatory neoplasms which are probably caused by chronically irritating bacteria.   MILL.

Congenital Intestinal Obstruction—N. J. Spriggs, Lancet, Jan. 8, 1910.

The prognosis in congenital intestinal obstruction is absolutely bad. In such a condition no hope of cure can be entertained unless there be surgical interference; and as yet no case of cure after operation has been recorded. Up to 1903 thirty-two operations for this condition were on record, and since then many more must have been performed. In the face of these facts, it is a matter of opinion whether or not any operative procedure should be undertaken.
                                        SACHS.

Intestinal Occlusion in Children—ALAPY, Archiv f. klin. Chirurgie, Vol. XCI., No. 4.

Ileus in children is more readily recognized than in adults because, practically, but two forms supervene, viz. inflammation of the vermiform appendix and its various sequelæ and invagination. Among forty-five cases of ileus there were but five which did not belong to one of the two groups.   MILL.

Early Diagnosis of Carcinoma of the Sigmoid—G. A. FRIEDMAN, Med. Rec., Feb. 12, 1910.

The most important points in the diagnosis of carcinoma of the sigmoid are, (1) the gradual development and gradual increase of constipation in an individual formerly quite normal in this respect, (2) if this constipation require the exhibition of powerful cathartics until, finally, even high irrigations do not completely empty the bowel, a stenosis of the lower part of the large intestine is present, (3) if the patient be forty or more years of age, carcinoma is probably the cause of the stenosis.   WESTERN.

Rectal Carcinoma—A. ZINNER, Archiv f. klin. Chirurgie, Vol. XC., No. 4.

Statistics concerning 201 cases of rectal carcinoma; 64 per cent. of the cases occurred in men, 36 per cent. in women. Following operation 16.8 per cent. died. Of 137 cases which were operated upon not less than three years previously, a permanent cure had ensued in 27 per cent.   MILL.

Tubercle Bacilli in the Feces of Consumptives and the Diagnosis of Intestinal Tuberculosis—F. KLOSE, Münchener med. Wochenschr., Jan. 18, 1910.

In the feces of sixty patients whose sputum contained tubercle bacilli these bacilli could be demonstrated in fifty-five instances, that is, in ninety per cent. of the cases. Excepting six cases in which the clinical symptoms justified a diagnosis of intestinal tuberculosis, all the other cases exhibited no phenomena which pointed in the least to intestinal involvement. It is evident that in all these cases the fecal tubercle bacilli were derived from the swallowed sputum. The demonstration of tubercle bacilli in the feces in the presence of active pulmonary tuberculosis with bacilli in the sputum does not justify the diagnosis of intestinal tuberculosis in the absence of clinical manifestations pointing to localized intestinal trouble.   MILL.

Diagnosis of Amebic Ulceration of the Large Intestine—A. B. COOKE, Jour. A. M. A., Feb. 19, 1910.

The symptoms of amebic ulceration of the large intestine do not differ from those due to ulceration from other causes. Loose stools, discharges of mucus, pus and blood, tenesmus, abdominal

distension, loss of appetite, strength and flesh, progressive anemia, etc., are the phenomena common to all forms of ulceration of the large intestine, but characteristic of none. It remains, then, in every case to institute a thorough local examination both to determine the site and extent of the trouble and to differentiate its exact nature. The rectum and sigmoid are practically always involved and with the modern means of examination the direct inspection of these parts presents no difficulties. If the lesions be of the amebic type, their appearance is so characteristic as to render them easy of recognition by any one who has ever before examined a case. The ulcers are variable in size, number and location, irregular in shape, but showing a tendency to extend in the direction of the circular muscular fibers. Except in old neglected cases the lesions do not extend deeper than the submucosa. In order for the microscopic examination to be of any real value in the diagnosis, it is of great importance that the specimen be properly obtained. Neither mucus nor feces are reliable for this purpose. The only reliable method of obtaining a specimen is by curetting an ulcer under direct vision through the proctoscope, the scraping being transferred to a slide and handled exactly as though it were merely mucus. If the case be one of amebic infection the organisms will rarely fail to appear in such a specimen. Another aid to diagnosis, but one of only corroborative value, is the leucocyte count. Leucocytosis is usually present and is closely proportionate to the degree of inflammation and the amount of tissue destruction.   WESTERN.

Calcification of the Liver—E. HEDINGER, Korrespondenzblatt f. Schweizer Aerzte, Vol. XXXIX., No. 24.

Report of the microscopical examination of this very rare pathological condition. The lime deposits, which consisted mainly of .calcium phosphate, were mostly found in the centre of the acini and the walls of the central and hepatic veins.   MILL.

Inflammatory and true Lithogenous Icterus—RIEDEL, Deutsche med. Wochenschr., Feb. 24, 1910.

The first attack of biliary colic is not, as a rule, accompanied by icterus. If icterus supervenes, it is mostly due to the extension of the inflammatory process to the biliary ducts or the liver itself.   MILL.

Pancreas Reaction of Cammidge—O. HESS, Deutsche med. Wochenschr., Jan. 13, 1910.

The Cammidge reaction for diseases of the pancreas is by no means specific; employed with precaution and utilized together with other symptoms and a critical consideration of all the results of the examination, it possesses a certain value.   MILL.

Acute Hemorrhagic Pancreatitis—L. IMFELD, Deutsche Zeitschr. f. Chirurgie, March, 1910.

Contrary to prevailing opinion, in the early stages, instead of a rapid pulse we usually find a slow one owing to the stimulation of the sympathetic by the pressure of the enlarged pancreas especially upon the solar plexus. This results in an impulse transmitted to the medulla and from there to the vagus before the pressure upon the sympathetic produces paralysis of the latter. Albuminuria as well as glycosuria are rare phenomena on the first and second days, although ingestion of 100 grams glucose produces alimentary glycosuria for twenty-four hours. The Sahli-iodoform and glutoid reaction is usually positive. Absence of indican in the early stage is deemed very important in contradistinction to its presence in ileus and peritonitis. Urobilin was not present in the author's case. STEIN.

Chyle Cysts—R. HINZ Archiv f. klin. Chirurgie, Feb., 1910.

A chylous cyst is generally palpable, exhibiting the usual characteristics of a cyst most frequently situated to the right and below the umbilicus intra-abdominally. Symptoms may vary from slight indisposition to severe pain, increase in size of abdomen, constipation, and often impending ileus. STEIN.

NERVOUS SYSTEM

Diagnosis of Subdural Hemorrhage of Traumatic Origin—T. A. McGRAW, Am. Jour. Surgery, Feb., 1910.

Diagnosis between extra- and subdural hemorrhage is often impossible. The following points are of value, though not absolutely reliable in the recognition of the subdural variety: (1) Blood in the cerebro-spinal fluid, (2) a long, free interval—usually over twenty-four hours, (3) a compression affecting the leg-center before the arm-center, (4) slow increase in the symptoms after the free interval ends, (5) ophthalmoscopic examination. By the latter may be revealed not only the choked disk, but in the early stage the changes, as decreased depth of the papilla, slighter diameter of the latter, diminished distance between points of entrance and exit of papillary vessels, swollen veins which are darker and distended. STEIN.

Visceral Angioneuroses—S. SOLIS COHEN, N. Y. Med. Jour., Feb. 19, 26, and March 5, 1910.

The manifestations of vasomotor ataxia are divisible into many groups, classes and subclasses which, however, may be grouped fairly well under the following heads: General, local or regional and multiregional. The diagnosis of visceral angioneurosis rests first upon the exclusion of primary infectious malady or structural lesion

in a case the symptoms of which exhibit a paroxysmal character or tendency, and are reasonably explicable upon the theory of disorderly vascular action; second, upon the recognition in the individual patient of certain physical characteristics and certain reactions to environmental change; and third, upon the pathogenic tendencies exhibited in the patient's personal or family history. The article is a very thorough study of the visceral angioneuroses, but does not lend itself to an abstract; it must be read in the original.   WESTERN.

Adiposis Dolorosa with Myxedematous Manifestations—HEINRICH STERN, Am. Jour. Med. Sciences, March, 1910.

The instance of adiposis dolorosa under consideration exhibited the following myxedematous manifestations: Apathetic, bloated physiognomy; history of non-pitting edema of face, legs, and feet; firm, inelastic, and rough skin in the face (seat of former edemas); falling out of the hair; non-palpable thyroid, and dermal tumefactions in the supraclavicular areas. This symptom complex alone would prompt the diagnosis of myxedema, but it was overshadowed, at least for the time being, by the acuteness of that of adiposis dolorosa. The association of the two syndromes is by no means accidental, although it appears that in none of the cases of adiposis dolorosa on record were the myxedematous features as plentiful and well pronounced as in the case described by author. In view of the frequency of myxedematous symptoms in adiposis dolorosa, author thinks we are justified in accepting a kindred cause of both syndromes. That thyroid insufficiency stands at the foundation of myxedema there can be little doubt; again, some thyroid alteration was found in four out of five cases of adiposis dolorosa which came to autopsy. While the seat of the externally visible pathognomonic symptoms of myxedema is in the subcutaneous tissues, that of adiposis dolorosa is situated in the fatty structures. Moreover, the improvement of the case following the administration of thyroid extract seems to evince with certainty that perverse thyroid function was, to say the least, an antecedent. The yielding of both symptom complexes to the same medication again points to their interrelation or their springing from a kindred cause. Thyroid therapy cannot, therefore, be utilized as a test of differentiation between myxedema and adiposis dolorosa, as some authors maintain, because both syndromes may vanish under its influence, and, as in the present instance, even at the same time. In so far as the pains disappeared in the ratio of shrinkage of the fat bunches, author concludes that the irritation of the nerve terminals was either due to mechanical insults on the part of the overgrowth of fat tissue, or to certain fatty acids or products of katabolism exciting the nerve trunks in the vicinity of the fat deposits and stimulating the fat-tissue to further.

proliferation. In view of the fact that myxedema occurs without pains in the swellings, it appears that thyroid insufficiency cannot be held directly responsible for the aches and paroxysms in adiposis dolorosa.   SACHS.

Myatonia Congenita, of Oppenheim—J. V. HABERMAN, Am. Jour. Med. Sciences, March, 1910.

The clinical picture of myatonia congenita is, on the whole, a typical one, and may roughly be landmarked as a congenital, atonic pseudoparalysis, met with in children in the first two or three years of childhood, in which the reflexes are very weak or abolished, electrical reaction reduced but never degenerative real atrophy not met with, the distribution proximal, with no progression, the muscles of bulbar innervation practically exempt, and no sensory, bladder, nor rectal involvement occurring. In a minimal group the children are older, contractures are present, the muscles small and thin. In the differential diagnosis infantile or congenital myxedema, mongolianism and particularly rickets have to be excluded.   SACHS.

Ovarian Epilepsy—H. S. DAVIDSON, Edinburgh Med. Jour., Feb., 1910.

All cases of ovarian epilepsy are not instances of true epilepsy, but many are cases of hystero-epilepsy, as is evidenced by the prolonged nature of the fits, the absence of any injury to the patient in the fits, of biting of the tongue, and of unconsciousness or involuntary micturition. In the majority of the cases of ovarian epilepsy there are organic changes of the ovaries either discoverable to the naked eye or microscopically. The symptomatology of the condition is that of epilepsy and hystero-epilepsy in general. In order to make a diagnosis of the condition it is of primary importance that the epileptic attacks should have coincided in their first appearance with the onset of menstruation, or at least their first appearance should be at a menstrual period though it may be some years after puberty. Otherwise it is impossible to definitely classify the case as one of ovarian epilepsy, and not as an ordinary epilepsy with the attacks intensified by a menstrual period, which is commonly found to be the case. Among the cases collected by the author the average age of the onset of this condition was eighteen years, the oldest having been thirty-five, the youngest eight years. It is only to be expected that if the condition is allowed to go on unchecked, the patient will in time be affected between the menstrual periods, but the fits will always be much worse just before or during the menstrual flow. The prognosis of operation is in the main distinctly favorable. Of thirty-three cases on which oophorectomy was performed twenty-two were completely cured, five showed more or less improvement, and in six cases there was no change.   SACHS.

Superficial Reflexes in Cerebral Apoplexy—HIGIER, Neurologisches Centralblatt, 1910, No. 4.

Some reflexes become modified at the same moment in which the cerebral affection arises.   WESTERN.

Symptomatology and Localization of Brain Tumor—W. G. SPILLER, Jour. A. M. A., Feb. 19, 1910.

A lengthy article written from the clinical standpoint which, to be appreciated, must be read in the original. It does not lend itself well to being abstracted.   WESTERN.

Blood Pressure Determinations in the Insane—MORGENTHALER, Allgem. Zeitschr. f. Psychiatrie u. psychisch-gerichtliche Medizin, Vol. LXVII., 1910, No. 1.

The clinical pictures of various forms of insanity cannot be differentiated by the blood pressure. High blood pressure is no constant symptom of melancholia. Among the cases of manic-depressive insanity there was none in which the blood pressure was low during the mania and high during the depression. The blood pressure is probably very high during the epileptic attack; after the seizure it suddenly decreases but still remains above the average to which it returns gradually. Dementia paralytica and præcox, alcoholism and hysteria exhibit no characteristic blood pressure.
                    WESTERN.

Blood Pressure in Mental Disorders—S. CLARKE, The Journal of Mental Science, Jan., 1910.

There exists no definite relationship between the various forms of mental disorders and the general blood pressure, excepting in cases of congenital deficiency when the pressure is, as a rule, subnormal. The variations which the author was able to obtain in the blood pressure of patients suffering with mental disorders were, for the most part, more satisfactorily accounted for by changes in the muscular activity rather than by alterations in the mental states of the patients under observation.   SACHS.

The Systematic Estimation of Leucocytosis in certain Forms of Insanity—S. C. HOWARD, The Journal of Mental Science, Jan., 1910.

That class of the insane falling under the category of mania presents a very definite and persistent clinical picture, a most noteworthy and important feature of which is the hyperleucocytosis. For the purpose of diagnosis, the estimation of the polynuclear leucocytosis may be of use in differentiating simple alcoholism from the more serious conditions in which alcoholic excess has merely

precipitated an attack, although the alcoholic excess receives the credit of being the exciting cause. The systematic observation of the leucocytosis is of value in prognosis. It has been shown that in those cases in which the leucocytic reaction is not marked, there is a strong tendency to chronicity terminating in fixed delusions and dementia; and conversely, that those in whom the leucocyte reaction is high most frequently recover.   SACHS.

Syphilis and Insanity—A Study of the Blood and Cerebro-Spinal Fluid— A. J. ROSANOFF and J. I. WISEMAN, Am. Jour. of Insanity, Jan., 1910, Vol. LXVI., No. 3.

On the basis of their results the relationship existing between syphilis and insanity is summarized by the authors in the form of the following tentative conclusions. The regular absence of lymphocytosis, of the Wassermann reaction, and of the butyric acid reaction in psychoses with a basis of arteriosclerotic disease known to be the result of old syphilitic infection indicates that these conditions are to be regarded as sequelæ of syphilis, and that the syphilitic process itself is in cases of these conditions already extinct. In general paresis either the Wassermann reaction or Noguchi's butyric acid reaction is invariably found—and most frequently together;—any doubt of the essential dependence of general paresis upon syphilitic infection can no longer be entertained. Inasmuch as the Wassermann reaction and the butyric acid reaction seem to indicate syphilis only when it exists in an active or potentially active form their regular occurrence in general paresis would tend to prove that that disease is a manifestation of active syphilis, of activity of the spirochæta pallida; while the evidence for this view is not as yet complete, it is sufficient to justify its being used as a basis of therapeutic essay. In no other common psychosis does either the Wassermann or the butyric acid reaction occur with any regularity or even with special frequency; the relation of syphilis to these psychoses is that of a complication of accidental coincidence. From the standpoint of diagnosis cytological examination of the cerebrospinal fluid is an indispensable aid in the practice of psychiatry; with the further aid of the Wassermann reaction and of Noguchi's butyric acid reaction the diagnosis of general paresis can be either established or excluded with practical certainty.   WESTERN.

Moral Imbecility in Childhood—W. STOELTZNER, Med. Klinik, 1910, No. 5.

Characteristic symptoms of moral imbecility in early life are: Slight attachment to parents, deficient sense of sympathy, malignant joy, absence of respectfulness and deference, brutal conduct toward younger children, cruelty to animals, destructive impulses. The prognosis is very gloomy.   MILL.

Moral Insanity in Children—G. ANTON, Deutsche med. Wochenschr., Feb. 10, 1910.

Children affected with moral insanity exhibit a certain unruliness, tendency to aggression, irritable temperament, incorrigible disposition to run away, to steal, to lie, to be furious, to be cruel, to bid defiance, to be disobedient, to negativism and impulsive acts. On the other hand there exists an increased suggestibility. The condition need not last for a lifetime; it is often a manifestation of catatonia or another clinical condition. The congenital form occurs relatively seldom. The mental qualities may be almost normal.

MILL.

A Case of Psychosis after Meat Poisoning—M. RAETHER, Deutsche med. Wochenschr., Feb. 24, 1910.

In a feeble-minded individual there ensued in the wake of meat poisoning mental disturbances which resembled the syndrome of Kraepelin's intoxication delirium.

URINARY ORGANS—MALE GENITALIA

Etiology and Symptomatology of Chronic Prostatitis—H. A. MOORE, Am. Jour. of Urology, March, 1910.

Chronic prostatitis is most commonly encountered between the twentieth and fortieth year of life; it is common between the fortieth and fiftieth year; uncommon from forty to sixty years; rare below twenty and above sixty years. Sexual symptoms: Prostatorrhea, diminished vigor, premature ejaculations and imperfect erections; frequent nocturnal emissions; sexual hypersensitiveness is uncommon; painful erections and ejaculations are rare. Prostatitis is, therefore, accompanied by sexual depression rather than sexual excitement. Urinary symptoms: Frequency and urgency of micturition; pain or burning during urination, slow or difficult urination; irritable prostate. Referred symptoms: Pain in low lumbar region and in perineum are most common; pain in rectum, neck of bladder, penis or urethra and suprapubic pain are common. Pain in the groin and testicle and thigh are uncommon, and all the other symptoms, pains in the leg, hip, knee, over sacrum, in buttocks, over kidney, simulating renal colic, simulating sciatica, are rare. WESTERN.

Inflammation of the Seminal Vesicles—J. N. BAUGHMAN, Lancet-Clinic, March 5, 1910.

Vesiculitis may be either acute or chronic. In the acute form we have about the same symptoms as those of acute posterior or prostatic urethritis. Urination is painful, as is also defecation, and there is throbbing pain in the perineal region. Sometimes there is

retention of urine.   In order to make a positive diagnosis the finger must be introduced into the rectum, when the hot and swollen vesicle may be felt; this procedure is, however, so painful that it is very seldom satisfactory and one cannot get the patient's consent for a second examination.   The patient has fever and all the symptoms of an acute inflammation in other parts.   An abscess may form, and most often ruptures into the urethra, unless it finds its way to the urethra through the ejaculatory ducts, though it may burrow its way through the perineum and rupture externally as an ordinary rectal abscess.   In the chronic form there usually exist the symptoms of the acute disease, but in a very much reduced degree.   The associated painful sensations are sometimes so mild as to be scarcely noticeable.   Sometimes the painful sensations are felt in one or both testicles, the scrotum, bladder and in the end of the penis, even more so than in the vesicles, and in this way may lead the examiner to mistake other parts to be the seat of the disease.   Sexual excitement always increases the painful sensations, and generally some pus and often blood is mixed in the urine.   The examination should be made while the patient stands with the legs straight and the body doubled over, in almost precisely the position of schoolboys playing leap-frog.   If we have the patient in the leapfrog position, and a full bladder to press the vesicles down as far as possible, and with the left hand pressing over the patient's lower abdomen, and with a chair or stool upon which to place our right foot, and thereby bring our knee on a level with the patient's anus, so we may have a brace for our elbow, and with the index finger of our right hand well lubricated, we can generally reach the vesicles by the combined pressure of the hand upon the patient's perineum, aided by the support of our elbow against the knee, by slow pressure overcome the resistance of the perineal muscles, and strip most, if not all, of the vesicles.   WESTERN.

Ureteral Calculi—S. WHITE, British Med. Jour., Jan. 1, 1910.

In the hands of an experienced radiographer a negative finding excludes a calculus as a rule.   Where a positive finding has been obtained, the case is a little different, because phleboliths in the uterine or pelvic veins, calcareous patches in atheromatous arteries, and especially tuberculous glands that have undergone calcification, or cast shadows which resemble in varying degrees that of an ureteral calculus.   A careful scrutiny of the picture may show that the shadow of the pseudo-calculus does not lie on the anatomical line of the ureter, and that it lacks the clear-cut outline of a genuine calculus.   The X-rays have demonstrated that, contrary to the belief formerly held, calculi are found in the ureter more frequently than in the pelvis of the kidney.   Primary calculi of the ureter are very rare.   The vast majority of the calculi descend from the pelvis

of the kidney, and most of these belong to the uric acid group, are oval in shape and quite smooth. When a calculus is impacted in a ureter, the latter hypertrophies and becomes dilated above the stone; this frequently acts as a ball-valve and produces intermittent hydronephrosis.   SACHS.

Perinephritic Abscess—M. B. MILLER, Annals of Surgery, March, 1910.

Aside from the usual points which may aid in diagnosing perinephritic abscess, such as history of a previous renal colic, alteration in the urine, chronic cystitis, ureteral catheterization, skiagraph, reactive tests, etc., author calls attention to a fixed point of tenderness in the triangle of Grynfelt and Lesshaft bounded by the erector spinæ, the twelfth rib and the internal oblique muscle. Response to pressure at this point is characteristic and instantaneous, whether the abscess is at its primary location or is affected indirectly through the substance of the kidney. Another point is the exceptionally high leucocytosis averaging 24,700 in contradistinction to a low leucocytosis in chronic infections of the kidney. The acute infections of the kidney proper do not approach so high an average of leucocytosis as occurs in perinephritic abscess.   STEIN.

Malignant Hypernephroma in Children—O. FRANCK, Beiträge z. klin. Chirurgie, Feb., 1910.

Malignant hypernephroma, so rare in children, bears certain analogy to other malignant tumors in children and somewhat to those in adults. The malignant character is soon seen through the rapid increase in the size of the tumor, wasting of the child, frequent and rapidly growing metastases and a peculiar involvement of the chest wall and breaking down of the latter. Hematuria is present in only about 16 per cent. of the cases, though albuminuria is frequent, as is also the presence of more or less fever.   STEIN.

Functional Diagnosis of Renal Disease—especially by Experimental Polyuria—E. L. KEYES, Jr., Annals of Surgery, March, 1910.

Author's conclusions in reference to the normal kidney are: Experimental polyuria usually increases the quantity of the urea and dilutes it—renal work increases. Sometimes the quantity does not increase but the urea percentage does. In the presence of certain marked pathological conditions the natural effect of the experimental polyuria may be counterbalanced. As considerable pathological stimulation might be overcome by excessive experimental stimulation the patient should drink more than three glasses of water to which even whisky may be added. The efficiency of experimental polyuria may be estimated by the fall in the urea percentage,

especially during the third half-hour. In reference to one diseased kidney—the quantity and quality of the urine excreted by the diseased kidney is inferior to that of the healthy kidney. The urea percentage curve of the diseased kidney is less abrupt than that of the normal kidney and may even fall instead of rising. In reference to both kidneys gravely diseased—low percentage of urea (and flatness of urea percentage curve).   STEIN.

FEMALE ORGANS OF GENERATION—PREGNANCY—PARTURITION—INFANTS

Pregnancy and Diabetes Mellitus—H. NEUMANN, Zeitschr. f. klin. Medizin, Vol. LXIX., No. 6.

Report of six cases; one case was that of the grave form, another case of the intermittent grave form, another case of diabetes associated with Graves' disease, and the three remaining cases were such of alimentary glycosuria. Diabetes had supervened in all instances after the women had married; in two cases it started before the second conception, in the others only during pregnancy; one diabetic became pregnant twice, the others but one time. The course of the diabetes proved to be dependent upon the diet. Rigid pursuance of a diabetic regimen accomplished the transformation of a grave case of diabetes into an intermittent form, and averted coma in two other instances. Not the pregnancy as such, but negligence in adherence to the diet influenced the diabetes unfavorably. The course of all pregnancies was entirely normal and uneventful. Parturition was also normal in every case; the children were well developed excepting one. Generally speaking, the association of diabetes and pregnancy occurs very rarely, and neither condition influences the other unfavorably.   WESTERN.

Histologic Examination of the Intestine of Nurslings—N. REIKA, Jahrbuch f. Kinderheilkunde, Vol. LXX., No. 5.

Results of the postmortem examination of eleven cases of rapidly fixed intestines (by means of Gregor's formalin injection method). The investigations confirm the fact that in nutritive disorders, even in the presence of grave toxicoses, there may not exist a microscopically demonstrable lesion.   MILL.

Bibliography

SERUM DIAGNOSIS OF SYPHILIS, and the Butyric Acid Test for
Syphilis. By Hideyo Noguchi, M.D., M.Sc., Associate Member of the
Rockefeller Institute for Medical Research, New York. Fourteen Illustra-
tions. Philadelphia and London, J. B. Lippincott Company.

Noguchi, by far the foremost syphilo-serologist on this side of
the Atlantic, has presented us with a readable, practical and withal
comprehensive work on the serum diagnosis of syphilis. The titles
of the various chapters will best explain the scope of the book.
I. Serum Hemolysis. II. Quantitative Facts about Hemolysis.
III. Antigens and Antibodies. IV. The Application of the Indirect
Method of Determining Antibodies to the Diagnosis of Syphilis.
V. Quantitative Relations of the Factors in the Serum Diagnosis
of Syphilis. VI. Various Forms of the Complement Fixation Test
as Applied to the Serum Diagnosis of Syphilis. VII. A System of
Serum Diagnosis of Syphilis Recommended by the Author.
VIII. Adjustability of the Writer's System. IX. Inactivation of the
Serum in Relation to the Syphilis Reaction. X. Technic of the Was-
sermann System. XI. Diagnostic Value of the Wassermann Reac-
tion. XII. The Butyric Acid Test.

In the last chapter the author's butyric acid test for syphilis
is dealt with in detail. This test is of positive value in the recogni-
tion of parasyphilitic affections of the nervous system; the method
of its application to cerebro-spinal fluids is very simple, and we ap-
pend it in the author's words for the benefit of our readers. One
or two parts of the cerebro-spinal fluid to be examined are mixed
with 5 parts of a 10 per cent. butyric acid solution in physiological
salt solution, and are heated over a flame and boiled for a brief
period. One part of a normal solution of NaOH is then added
quickly to the heated mixture, and the whole boiled once more for a
few seconds. The actual quantities of these three agents that the
originator prefers are 0.1 or 0.2 c.c. of the spinal fluid, 0.5 c.c. of the
butyric acid solution, and 0.1 c.c of the normal sodium hydroxide.
It is necessary to take the precaution to employ for this test only
cerebro-spinal fluid entirely free from blood.

The presence of an increased content of protein in the cerebro-
spinal fluid is indicated by the appearance of a granular or floccular
precipitate, which gradually settles to the bottom of the tube, beneath
a clear, supernatent fluid. The velocity and intensity of the reaction
vary according to the quantity of the protein contained in a given
specimen. The greater the amount of the protein, the more quickly

and distinctly the reaction appears. The granular precipitate appears within a few minutes in a specimen containing a considerable increase in protein, while two hours may be required to obtain a distinct reaction in specimens weaker in protein. In obtaining the reaction, the time period should not be greater than two hours.

This reaction Noguchi has found to appear regularly in the cerebro-spinal fluid of the patients with syphilitic and parasyphilitic affections, and also in all cases of inflammation of the meninges caused by such microorganisms as diplococcus intracellularis, pneumococcus, influenza bacillus, tubercle bacillus, etc. These acute inflammatory infections are, of course, readily differentiated from the syphilitic affections. Normal cerebro-spinal fluid gives with the butyric acid test a slight opalescence and sometimes a marked turbidity, but the granular precipitate does not occur at all or occurs only after several hours or even after twenty-four hours.

We highly commend the book to all those who are interested in the real progress of medicine. H. S.

TEXT-BOOK OF MEDICAL AND PHARMACEUTICAL CHEMISTRY. By ELIAS H. BARTLEY, B.S., M.D., Ph.G., Professor of Chemistry, Toxicology, and Pediatrics in Long Island College Hospital; Late Dean and Professor of Organic Chemistry in the Brooklyn College of Pharmacy; Late Consulting Chemist to the Dep't of Health of the City of Brooklyn, etc., etc. Seventh Revised Edition. With Ninety Illustrations. Philadelphia, P. Blakiston's Son & Co., 1909.

Bartley's popular text-book, now in its seventh edition, is more perfect and useful than ever. Its particulart charm consists in its simplicity, succinctness and freeness from speculative matter. The section on physiological chemistry includes the latest researches and their practical application to medicine. The student of the present day will find it as invaluable an aid as did his brother a decade ago. H. S.

DIAGNOSTIC THERAPEUTICS. A Guide for Practitioners in Diagnosis by Aid of Drugs and Methods other than Drug-Giving. By ALBERT ABRAMS, A.M., M.D. (Heidelberg). Consulting Physician to the Mount Zion Hospital and the French Hospital, San Francisco; Formerly Professor of Pathology and Director of the Medical Clinic, Cooper Medical College (Medical Department of Leland Stanford Junior University), San Francisco. With One Hundred and Ninety-eight Illustrations. New York, Rebman Company, 1910.

It is not an easy task to pass judgment upon Dr. Abrams' stupendous volume of 1039 pages. A thorough estimate of the work must be based upon three factors, viz., its encyclopedic value, its usefulness in daily practice, and its originality.

The comparatively wide range of topics briefly dealt with in this volume puts the stamp of a reference work upon it. It is really in this respect that it excels and that it will be of lasting value. However, its efficacy as a guide in the special fields it covers is seriously hampered by the newness of viewpoint and arrangement, and the multiplicity of material. As a work of original conception it stands almost alone in latter day American medical literature.

Personally, the reviewer is sorry that the author has not adhered to his original plan to limit the book to a consideration of drugs in diagnosis; it would have made a handier, more practical, more indispensable, and last but not least, a cheaper, and therefore more popular book, and books of this class should have the widest possible circle of earnest readers.

The book is divided into six sections. The first section deals with "Mistakes in diagnosis—factors in the etiology of disease—psychology of the patient—psychic factor—technic of prescribing—table of weights—incompatible drugs." The second chapter is devoted to essays on "Interfering action of drugs in diagnosis—drugs in the etiology of disease—food in the etiology of disease—methods other than drug-giving in the etiology of disease." Chapter three deals with "Drugs in diagnosis (diagnostic-pharmacotherapy)." In the fourth chapter "Methods other than drug-giving in the diagnosis of disease" are considered at length. Chapter four is an exposé of "Etiologic-diagnostic-therapeutics." In the sixth chapter "The diagnosis of visceral sufficiency" is rather exhaustively reviewed.

Thus far this is the best and most instructive work of the indefatigable, versatile and accomplished Dr. Abrams. We sincerely trust that it will find its way into the library of every diagnostician.

<div align="right">H. S.</div>

FUNCTIONAL DIAGNOSIS. The Application of Physiology to Diagnosis. By Thomas G. Atkinson, M.D., Associate Professor of Neurology and Physiology, Chicago College of Medicine and Surgery; Professor and Head of Department of Physiology, Chicago College of Dental Surgery; Editor of the Medical *Standard;* Author of "Essentials of Refraction." Chicago, Chicago Medical Book Company, 1909.

The author's reasons which prompted him to write this little book are most cogent and valid. "There is an obvious hiatus in the current teaching and practice of diagnosis," he states in his introductory remarks, "—a missing link, so to speak, between physiology and pathology. Current text-books base their diagnostics upon the isolated, objective, morbid conditions which constitute the disease-complex, and which too often represent the last structural changes wrought by disease, rather than the functional derangement in which

disease usually has its beginnings. The spirit of the times calls for a prophylactic type of diagnosis—one that shall detect disease in its functional outposts."

"It is of prime importance that the diagnostician be able to reason back his symptoms to their functional premises, and to state his pathologic condition in terms of physiology. It is of equal importance that he be able to establish this functional relation as directly and as close to the normal as possible, so that his diagnosis may be as nearly as possible a proximate principle. This is where, in the author's judgment, all of the many excellent works on diagnosis now in the field are lacking, and it is in the hope of making good this lack, and establishing a direct, sequential connection between normal physiology and disease symptoms, that this work on functional diagnosis is offered. It attempts the task of translating the normal functions of the body, through their various derangements, into terms of disease."

The reviewer fully subscribes to the author's contentions, but he opines that we cannot as yet write a book on functional diagnostics based on the little we really know about it. What Dr. Atkinson has given us is an excellent compendium on pathological physiology, a practical little hand-book of that fundamental medical science of which Ludolf Krehl is the foremost exponent. Pathological physiology occupies the same relative position to functional diagnostics as does pathological anatomy to physical diagnostics. As yet the science of functional diagnosis is in its very beginning; the few data which we possess do not suffice to make a book.

Meanwhile, let us be thankful for Dr. Atkinson's brave attempt. He is on the right track, and his little book, which contains a heap of physiological and pathologico-physiological information, should be a guide to teachers of the fundaments of medicine.   H. S.

THE PRACTICE OF MEDICINE. A Text-Book for Practitioners and Students with Special Reference to Diagnosis and Treatment. By JAMES TYSON, M.D., Professor of Medicine in the University of Pennsylvania and Physician to the Hospital of the University; Physician to the Pennsylvania Hospital; President of the College of Physicians of Philadelphia; Member of the Association of American Physicians, etc. Fifth Edition, Revised and Enlarged. With 5 Plates and 245 other Illustrations. Philadelphia: P. Blakiston's Son & Co., 1910.

This well-known text-book certainly deserves its wide popularity. The present edition contains various additions and elaborations. Cammidge's pancreatic test has been inserted. The Adams-Stokes syndrome is dealt with at length, and the subject of pericarditis has received particular attention. Paragraphs on the treatment of Graves' disease by the anti-serum have been added. The Wassermann reac-

tion has received due consideration. The small price which the publishers charge for this stately volume ($5.50, 1,438 pages,—the reviewer does not see how they can afford it), should induce even him who abhors spending money on books, to purchase the fully modernized Tyson's Practice of Medicine.   H. S.

PRACTICAL PHYSIOLOGICAL CHEMISTRY. A Book designed for Use in Courses in Practical Physiological Chemistry in Schools of Medicine and of Science. By PHILIP B. HAWK, M.S., Ph.D., Professor of Physiological Chemistry in the University of Illinois. With 2 full page Plates of Absorption Spectra in Colors, 4 additional full page Color Plates, and 126 Figures of which 12 are in Colors. Second Edition, Revised and Enlarged. Philadelphia: P. Blakiston's Son & Co., 1909.

A very useful little work on physiological chemistry which covers the field in a practical and, on the whole, in a satisfactory manner.
                                                                H. S.

HANDBOOK OF THERAPY. Chicago, American, Medical Association, 1910.

This is a reprint, in a book of 421 pages, of certain articles which have appeared under the caption of "Therapeutics" in the *Journal of the American Medical Association.* The articles are well selected; unusual drugs have been entirely omitted. The little volume abounds in practical formulas of combinations which can be readily compounded by the pharmacist. It contains a number of tables and compilations of valuable data; one of these is a list of all articles accepted by the Council on Pharmacy and Chemistry. The book will prove of considerable value to the general practitioner.   T. F. R.

THE

ARCHIVES OF DIAGNOSIS

A QUARTERLY JOURNAL DEVOTED TO THE STUDY
AND THE PROGRESS OF DIAGNOSIS AND PROGNOSIS

Special Articles

DIAGNOSTIC ERRORS DISCLOSED BY BISMUTH PASTE INJECTIONS

By EMIL G. BECK

Surgeon to the North Chicago Hospital

Chicago

Most of our diagnostic errors are disclosed either at the operating table or the post-mortem table. This fact was vividly brought to us by Dr. Cabot in his recent study of percentages of diagnostic failures. His report teaches us that we err in diagnosis oftener than we realize. If our patient recovers, we assume that our diagnosis was correct, and if he dies and autopsy is not made, we have no proof that our diagnosis was incorrect. When the expert, with all the necessary diagnostic aids, such as a complete laboratory, a pathologist and radiologist, to assist him, and whose experience has sharpened his diagnostic skill, confesses to such a large percentage of diagnostic failures, there is little doubt that those who have not all these advantages must necessarily be guilty of a still larger percentage of diagnostic errors.

Failure in diagnosis, however, does not necessarily mean failure of cure. Many a patient gets well and sounds the praise of his doctor, when the doctor himself is still in doubt as to what was the matter with his patient. Kind nature is aware of our diagnostic shortcomings and shields our ignorance by performing miraculous cures.

The fact, however, that patients occasionally get well without a diagnosis should not deter us from an untiring effort to have a complete understanding of their ailments. Treatment based on a false diagnosis is far more dangerous than a treatment based on "no diagnosis." As long as the physician is uncertain as to what ails his patient, he will be more conservative in his treatment and apply only such remedies that can do no harm. But when he has by false reasoning arrived at an incorrect diagnosis, then his heroic treatment is based on false conclusion, and he may do irreparable damage.

These facts were vividly illustrated to me a number of times during the past few years while studying the diagnosis of suppurative sinuses by means of injections with the bismuth paste.

The most unexpected and surprising conditions were disclosed in cases which for years had been carefully observed and treated, and the causes of failure in the treatment were at once explained.

I take it for granted that most of my readers are familiar with the method of these diagnostic bismuth injections, and therefore I shall only mention the principles on which this method is based, and refer the reader to my previous publications for detailed description of technic, etc.

This new diagnostic method of tracing sinuses is carried out by injecting sinuses or abscess cavities with a liquefied paste composed of one part bismuth subnitrate and two parts of vaselin. After injection this paste becomes semi-solid on cooling and is retained within these channels long enough to permit taking a radiograph of the region so injected.

The bismuth produces a distinct shadow on the sensitive X-ray plate, and thus a true picture of the network of the sinuses is reproduced. The radiograph obtained will outline in perfect clearness the boundaries of sinuses and in many instances will trace the path to the original focus of the disease from which the sinus sprang. Still greater is the advantage when stereoscopic radiographs are employed. These are obtained by making two separate exposures of the same region from two different angles and then examining the stereoscopic pair of plates by means of a pair of prisms. These stereoscopic radiographs bring before our eyes a picture in which all structures stand out in plastic effect. The relation of the sinuses to other structures is very easily estimated. We are able to tell whether a

FIG. I. Stereo-Radiograph of Tuberculous Knee-Joint

DIAGNOSTIC ERRORS DISCLOSED BY BISMUTH PASTE INJECTIONS

Emil G. Beck

FIG. III. Stereo-Radiograph showing that the Bismuth Paste reaches the very end of every small Branch of the Bronchial Tree

DIAGNOSTIC ERRORS DISCLOSED BY BISMUTH PASTE INJECTIONS

Emil G. Beck

sinus winds in front or behind of a certain bone or whether it runs through it.

For illustration I show in Fig. I a stereo-radiograph of a tuberculous knee-joint in which forty-two sinuses, extending over two-thirds of the patient's femur, down to the middle of the leg, were injected with the paste. The stereoscopic picture here shown demonstrates the advantage of a stereoscopic radiograph over that of a single plate. In a single plate all shadows appear in one plane and one cannot tell what relation they bear to one another, but as soon as the picture is viewed through the stereoscope the shadows of the various sinuses are instantly shifted into their respective depths, so that one can judge their distance from one another.

The advantages of this method of anatomical diagnosis are at once apparent. We are in a position to study the topography of the sinuses before deciding upon operations, and thus discriminate between operable and inoperable cases. Most of us will recall instances in which such picture would have aided us greatly and probably saved many useless operations.

At times such radiographs will explain the causes of failure. Through faulty diagnosis the operation has been incomplete. While such operations were at the time regarded as most radical, in the light of our recent knowledge of the complexity of these tracts, they prove to be incomplete.

I quote to illustrate:

R. K., thirteen years old, with tuberculous family history, was well until the age of five, when a swelling in his left hip, posterior to the greater trochanter, appeared. An abscess ruptured spontaneously and a copious purulent discharge persisted for seven years, which greatly debilitated the boy. In July, 1908, he was given the first injection of bismuth paste by Dr. Dahl, with whom I saw the case. The radiograph (Fig. II.) disclosed the fact that the abscess did not originate in the hip-joint, as one would suspect from the location of the sinus, but that it communicated with the original focus in the sacrum by a narrow channel. This case proved to be not only an interesting example of the diagnostic value of the bismuth paste, but it likewise credited the therapeutic account with a cure of which both the doctor and patient are justly proud.

I have demonstrated by means of radiographs that abscesses very

often open at a distance from the seat of their origin. The psoas abscess, for example. Its origin is in the spinal vertebræ, its opening in Scarpa's triangle. It may open in the lumbar region and may be . easily mistaken for an abscess of the kidney, or vice versa.

This is not theoretical. I have previously cited cases to illustrate this most lucidly.

The following case illustrates that a sacral disease may for years be treated for hip-joint disease:

J. F., thirty-four years old, presented himself for treatment of sinus about the trochanter of his right hip. This sinus had existed for several years and had been treated with washes, cauterization, but had received no surgical treatment. It was thought to originate from the hip-joint. The radiograph (Fig. IV.) shows clearly that the hip is entirely free from the disease, and that the sinus originates in the sacrum. The shadow of the injected paste traces the channel to the original focus of the disease, the sacrum. There it fills a ring around the diseased vertebræ and from there it traces a similar tract running to the opposite side, near the hip-joint, where it terminates in a blind end.

In former times the probe was our chief diagnostic aid in exploring these sinuses. This instrument must, in the light of these pictures of the tortuous and multiple tracts, appear very unreliable.

It needs very little to convince one of the uselessness of trying to explore a network of sinuses, such as are shown in these radiographs by means of a probe. The probe will enter a blind sidetrack or a fold and leave us under the impression that we have reached the bottom of the sinus, when in fact a labyrinth of sinuses beyond our conception may exist, undermining the whole region.

Staining the tracts with injection of methylene blue in order to facilitate the tracing of them during surgical operations is likewise an unreliable method. In the first place, the extent of the sinuses is not shown to us before the operation. The sinuses may extend into inaccessible regions, and this method does not disclose this until the patient has been anesthetized and at times only after he has been subjected to a tedious and often dangerous operation.

For this same reason the injection of peroxide of hydrogen is to give preference to the radiographs which furnish us a plan for our operative procedure.

FIG. II

FIG. VII

DIAGNOSTIC ERRORS DISCLOSED BY BISMUTH PASTE INJECTIONS

Emil G. Beck

FIG. IV.

FIG. V

DIAGNOSTIC ERRORS DISCLOSED BY BISMUTH PASTE INJECTIONS
Emil G. Beck

By the bismuth paste method, when properly carried out, a picture is shown to us before any operative steps are taken, and it is almost impossible to miss any of the sinuses. That the paste will reach all branches of the sinuses, we have demonstrated by experiments; in injecting blood vessels of various organs, or the bronchial tree of animals, which showed that every small branch could be traced to its very end. (See stereo-radiograph, Fig. III.)

In no other region are diagnostic errors more frequent than in rectal fistulæ. I have encountered a considerable number of cases, diagnosed and treated for rectal fistulæ, which were not rectal fistulæ at all, but sinuses resulting from tuberculosis of either the sacrum or some other pelvic bone, or sinuses from intrapelvic suppurations. The abscesses happened to open so near the anus that the resulting sinuses were diagnosed as rectal fistulæ, and operated upon a few times, in some instances with the disastrous result of producing an incontinence, and simply transposing the opening of the sinus from the outside into the lumen of the rectum. Fig. V. illustrates such a case which has a coccygeal origin.

Are we to assume that every sinus which happens to open near the anus must be a rectal fistula? Certainly not!

I shall cite a case which illustrates such fallacy:

A young lady, seventeen years old, developed a typical hip-joint disease, two years ago. After extensive destruction of the joint and shortening, two abscesses formed and one opened above Poupart's ligament, the other on the anterior aspect of the thigh. She complained also of intrapelvic pain, constipation and pain during urination. An examination of the rectum revealed an abscess high up in the rectum. Compressing the abscess would cause the escape of pus through both sinuses in her groin. The radiograph of the bismuth paste (Fig. VI.) gives a very graphic picture of the abscess formation in the vicinity of the rectum. The abscess ruptured spontaneously into the rectum about three weeks later, and resulted in an intrarectal fistula.

Here, then, is a fistula opening into the rectum, which in the true sense is not a fistula; it is a sinus from a tuberculous hip-joint, and its cure can be accomplished only by curing the focus in the hip-joint, and not by rectal operation.

The following typical case illustrates how an incorrect diagnosis may lead to many futile operations:

Rectal fistula originating in the pelvis. The patient, a lady, thirty years old, has since 1900 undergone six operations for rectal fistula, all of which failed to stop the profuse and irritating pus discharge. The last operation was very extensive and produced incontinence of feces. In this condition the patient came to me in January, 1908, when I made the first bismuth paste injection. A radiogram (Fig. VII.) disclosed that the fistula had its origin high up in the pelvis. Several sinuses as high as the sacral prominence are plainly shown, the early discovery of which could have saved the patient the six useless operations and nine years of invalidism. This fact was corroborated further by the most satisfactory result obtained from the bismuth paste injections. It required three months' treatment, but finally the sinuses healed. The sinuses were intrarectal, but the large gaping opening permitted their being easily seen and injected without much difficulty. A year after the cessation of discharge a plastic operation for the incontinence was tried, but resulted in only partial success.

Examples such as these will naturally put us on our guard against regarding every suppurating opening in the vicinity of the rectum as a rectal fistula. A perfect radiograph with the sinus injected will clear up the diagnosis in every instance.

It must be remembered that a fistula is nothing more than the shrivelled remains of an old collapsed abscess and not, as is often supposed, a channel formed by an ulceration boring its course through healthy tissues. At times the abscess is multilocular and undermines an area of the perineum, which after rupture of these abscesses results in a network of fistulous tracts, which may encircle the entire rectum and open in several places, thus causing multiple fistulæ.

These multiple fistulæ are most frequently one system of channels which have more than one outlet. This may be easily proved by injecting one of the openings with the paste and watch the escape at the other openings.

My experience in the diagnosis and treatment of rectal fistulæ warrants the assertion that at least twenty-five per cent. of all fistulæ which open around the anus have their origin at some distance

FIG. VI
DIAGNOSTIC ERRORS DISCLOSED BY BISMUTH PASTE INJECTIONS
Emil G. Beck

from the rectum and are the result of some disease process, either in the pelvic organs or some focus in the osseous system of the pelvis.

It is, therefore, advisable to take a radiograph of every case of rectal fistula before deciding upon any operative treatment.

As this article deals only with diagnosis, I omit speaking here of the treatment of these fistulæ by the bismuth paste, but must mention that these diagnostic injections lead, in at least sixty per cent. of cases, to a spontaneous cure, without surgical interference and, therefore, if for no other reason than this, the diagnostic injection should precede surgical intervention in every case. Bismuth poisoning can be prevented when the rules of application are followed.

I trust that the citation of these few examples from a large number of similar ones may be sufficient proof that by the use of the bismuth paste for diagnostic purposes we may facilitate our operative procedures and occasionally save a patient a useless operation.

THE DULL-FLAT PERCUSSION NOTE: ITS SIGNIFICANCE IN EARLY PULMONARY TUBERCULOSIS

By ROBERT ABRAHAMS

Adjunct Professor of Medicine, New York Post-Graduate Medical School and Hospital; Attending Physician, Home of the Daughters of Jacob

New York

The percussion note to be described in this short paper has the merit of definite and intelligible nomenclature added to distinct diagnostic value in early tuberculosis affecting certain areas of lung.

No novelty of introduction is claimed for that note as it has been and is variously described as "diminished resonance"; "relative dulness"; "impaired resonance"; "wood-like sound," etc., all graphic but none to the point. The intention of authors and writers on the subject is to convey, by these various terms, the idea that, in the presence of tuberculous infiltration, areas which normally yield dulness on percussion, under the new and pathological influence the normal dulness is heightened or deepened so that the new sound becomes

"relative," "diminished," "impaired" or "wood-like" in comparison with the original tone.

In teaching physical diagnosis I found these compound adjectives utterly inadequate. They are not expressive or impressive, they are neither fife nor flute. Accordingly, the term *dull-flat* was introduced and it was found to be clear, ample and graphic, conveying an exact

FIGURE . 1.
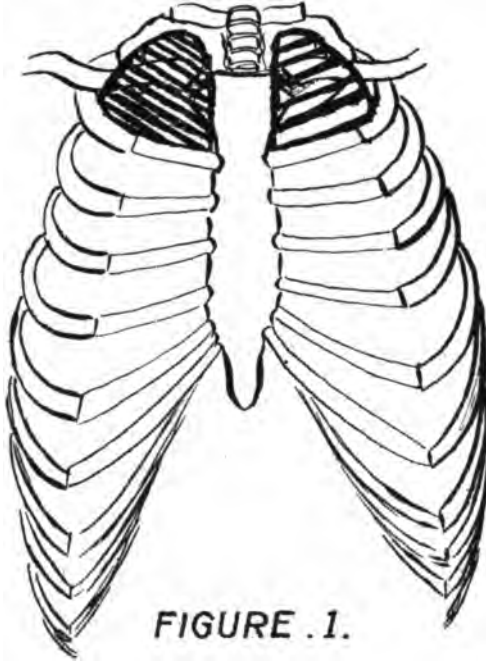
NORMAL APICES
R. Apex—Dulness
L. Apex—Normal Vesicular

idea of the character and quality of the percussion note. Students have no difficulty in grasping and appreciating it.

Technically the *dull-flat* note is shorter in duration and higher in pitch, its acoustic qualities stand between dulness and flatness, or it is a note wich is duller than dull. (Compare the right apices of Figs. 1, 2 and 3.)

The appropriateness of the name finds sufficient precedence in that respiratory sound which was named and characterized by

Austin Flint as "broncho-vesicular," meaning thereby that the breath sound is neither bronchial nor vesicular and that the sound occupies a middle ground between the two. Taken in this sense, the dull-flat note has meat, meaning and individuality.

First its diagnostic value in incipient tuberculosis. Here, the writer wishes to emphasize the strangely misunderstood fact, namely,
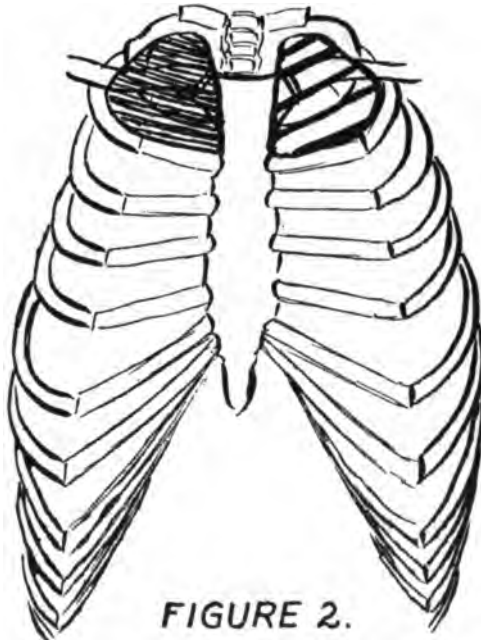
FIGURE 2.

R. Apex—Dull Flat Note
L. Apex—Normal Vesicular

that some areas of the lungs normally possess dulness on percussion. Those areas are (1) the right apex and a finger's breadth under the right clavicle (Fig. 1) ; (2) the intrascapular space, say from the seventh cervical to the fourth or fifth dorsal vertebra, and (3), in some instances, the lower third of the base of the right lung. Now, in the presence of an *early* infiltration either of these areas drops its normal dulness and assumes the *dull-flat* resonance. This change in tone is unmistakable on *light* percussion (Fig. 2).

Hand in hand with the modification in resonance there will be found a corresponding, proportionate change in the resistance.

To further attest the accuracy and value of the dull-flat note let the normal right apex be lightly percussed under natural breathing and the percussion note will be dull. Order the patient to take a full breath and keep the breath in. Now, while the apex is thus
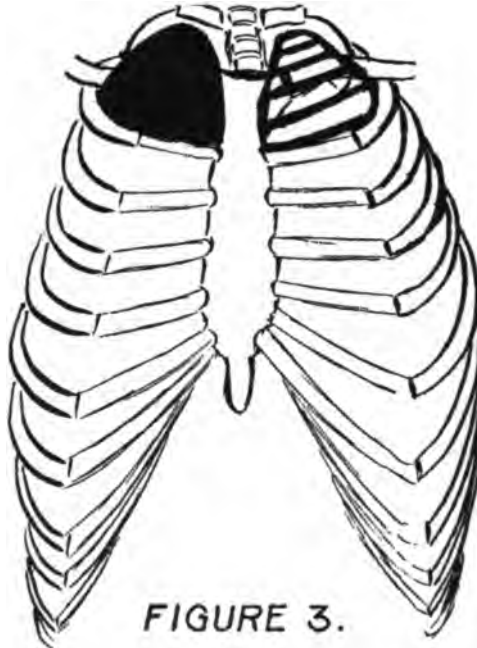
FIGURE 3.

R. Apex—Flatness
L. Apex—Normal Vesicular

inflated and expanded, the normal percussion dulness will changé into vesicular resonance. When, however, the right apex is the seat of early tuberculosis, the same light percussion under full and forced expansion of the apex will hardly produce any perceptible change in the original dull-flat resonance.

What is true of the right apex is equally true of all the other areas of lung where dulness on percussion is a normal physiological feature. This is stated in order to avoid repetition.

Secondly, the dull-flat note is of value in ascertaining the progress of the tubercular process in *any* part of the lung. Take, for example, the left apex. Under normal conditions the percussion note of the left apex is pulmonary or vesicular. In the presence of an infiltration the vesicular resonance will change into dulness. Dulness indicates incipiency. By watching the modifying degrees of the dulness in that apex and the eventual change of that note into the dull-flat, one can predict with accuracy the progress that the tuberculous deposit is making.

From this consideration and comparison it is evident that, whereas lung areas which yield vesicular resonance on percussion may be said to be considerably advanced in tuberculosis when they yield the dull-flat note, areas which are normally characterized by dulness on percussion may be said to be in the incipient stage when they are possessed of the dull-flat sound.

To those whose experience in percussion is limited, the writer advises to refer to the deep area of the heart for standard dulness.

THE DIAGNOSIS OF BRONCHIAL ASTHMA

By THOMAS F. REILLY

Professor of Applied Therapeutics, Fordham University School of Medicine
New York

To many the diagnosis of the syndrome known as bronchial asthma will seem a simple matter, yet at one of the recent meetings of the British Medical Association there was anything but an unanimity of opinion among the leading English authorities on what is meant by this term. So great an authority as Samuel West, of London, made the statement that bronchial asthma is a rare disease, and that in his opinion there were not more than five hundred cases to be found in the whole city of London. If there is one city in the world where we should expect asthma to be widespread it is London in which dwells a population with a large gouty ancestry, where there is a murky atmosphere with frequent fogs and rains, and which,

accordingly, offers the best possible location for the propagation of bronchial asthma.

Certainly the disease is very much more common than is evinced by Dr. West's statement; at any rate our information is radically different from that of the famous specialist in respiratory diseases.

As we understand it, bronchial asthma is a dyspnea beginning suddenly and rapidly growing worse up to almost the point of suffocation with prolonged expiration as its dominant clinical symptom. We may perchance obtain a history from one of the bystanders that the patient has had previous attacks at long intervals. On auscultation, early in the attack, we hear sibilant and sonorous râles. If a bronchitis has preceded the attack, which is often the case, there are in addition many moist râles. The expectoration seems to be entirely performed with the aid of all of the expiratory muscles, among which the abdominal group is strongly brought into play.

The lungs are distended to the extreme limits of the chest capacity. Their borders extend from one to two interspaces more than usual, and they do not retract in a noticeable degree during respiration. Percussion gives a tympanitic band-box note.

After a time sputum appears, and if a microscopical examination be made Curschmann's spirals, large numbers of eosinophile cells and Charcot's crystals may be found.

Close questioning develops the fact that there are other indications of a neurotic basis for the disorder.

Such is the typical case, but seldom is it that we find typical cases anywhere outside of text books, so that when one is brought face to face for the first time with a patient suffering from expiratory dyspnea of a paroxysmal nature, it is not always an easy matter to make a diagnosis at a glance without a previous history, which may not be obtainable on the spot.

A rapidly beginning dyspnea in a child makes one think at once of a spasm of the glottis or the inhalation of a foreign body. The duration of the first condition is a matter of a few minutes or seconds; the symptoms, rapidly disappearing, are prolonged, crowing inspiration and cyanosis. There are no fine râles nor prolonged expirations. The second condition is easily diagnosed by the extensive excursions of the larynx, by the absence of râles, the pres-

ence of hoarseness, and sometimes nausea and vomiting. Generally, but not always the dyspnea is of the inspiratory type. The attacks of dyspnea occurring at times in patients suffering from aneurysm of the aorta is often quite confusing unless one is aware of the presence of the aneurysm. The complete filling of the chest by the lung is likely to obscure the ordinary physical signs of the aneurysm. I have made such a mistake and know of no way that the error can be generally avoided without a Röntgen ray picture.

Inasmuch as we must view asthma essentially as a neurosis due to an irritation of some branch of the pneumogastric nerve, there is no reason why an aneurysm of the aorta should not induce a true bronchial asthma as well as an irritation in the nose, throat, or elsewhere. In an adult the condition most likely to be mistaken for bronchial asthma is the attack of sudden dyspnea occurring without exertion in patients suffering from broken compensation, and which has been termed cardiac asthma. It is a quite common occurrence to be called to see a patient suffering with a marked dyspnea, the shoulders bent over like those of the typical asthmatic with a chest of the barrel-shaped variety; the face of an ashen-livid hue, covered with sweat, and anxiety written on every feature. A word is gasped forth at every second or third expiration. The expiratory movement is markedly prolonged, but inspiration is also somewhat longer than usual. This prolongation of inspiration often strikes one as being due to an effort on the part of the patient to get more strength to utter the word that he literally throws out. Oftentimes there is a bloodstained, frothy expectoration such as we find in pulmonary edema. The pulse is rapid and irregular and the chest is full of all kinds of râles. The questions that the stranger to the case must put to himself are: First, am I dealing with a case of bronchial asthma engrafted on an old emphysema—the irregularity of the heart being a non-pathological arrhythmia—or, second, with a case of bronchial asthma in a patient suffering from cardiac disease, or, third, a case of so-called cardiac asthma, or, fourth, a case of suddenly developing pulmonary edema in a patient affected with cardiorenal disease?

In non-complicated cases of bronchial asthma the râles are dry at the commencement of the attack; in cases of cardiac disease and pulmonary edema there are moist as well as dry râles present. The

tension of the pulse is usually high in bronchial asthma and low in cardiac asthma. In both pulmonary edema and cardiac asthma, there is an accentuation of the second pulmonic sound and a small weak, thready pulse. The facies in bronchial asthma is unchanged or at most slightly cyanotic, whereas in the cases of cardiac asthma and pulmonary edema there is an ashen hue accompanying the cyanosis. In true bronchial asthma the heart sounds can scarcely be heard on account of the extensive filling of the precordium by the distended lung. In cases of cardiac asthma this distension of the pulmonary area is not so great, and it is usually possible to hear the heart sounds quite distinctly. In cases of cardiac asthma there are other evidences of preceding defects of the vascular system, i.e., edema, dyspnea on exertion, varicosities, etc. The percussion note in cardiac asthma is never the band-box sound that we hear in bronchial asthma. In pulmonary edema the percussion note is more often dull than tympanitic. In the average case analysis of the sputum is not of any practical value, as a decision must be made before there is time to examine slides, etc. Furthermore, the characteristic sputum may or may not be present. If one has the time he can try the effect of medicinal agents as a means for diagnosis. In more than fifty per cent. of the cases of true bronchial asthma the spraying of the nasal mucous membrane with suprarenal extract or the active principle of the suprarenal gland will produce a temporary amelioration of the spasm, and the wheezing will be markedly reduced. Cocaine will sometimes produce the same effect. Again, the various inhalents, hyoscyamus, nitre, etc., will likewise be often efficient in relieving the spasm, and thus will serve as a means of differentiation between bronchial and cardiac asthma, as in the presence of the latter these drugs will not avail.

Hay asthma and bronchial asthma are essentially the same conditions. In the cases of hay asthma we have a history of a previous attack or of hay fever which sometimes alternates with hay asthma. The attack rarely begins as suddenly as ordinary bronchial asthma. There is usually a history of a bronchitis of several days' duration preceding the attack. There are a few other conditions that simulate bronchial asthma, such as spasm of the diaphragm and diseases of the vagus, but these cases are so rarely seen that they do not merit our attention in general practice.

AN ACCURATE METHOD OF ESTIMATING THE HEIGHT OF THE LIQUID IN HYDROTHORAX

BY JOSEPH H. BARACH

Pittsburg

As an aid to the refinement of diagnostic investigation, the following simple method of demonstrating the exact height of fluid
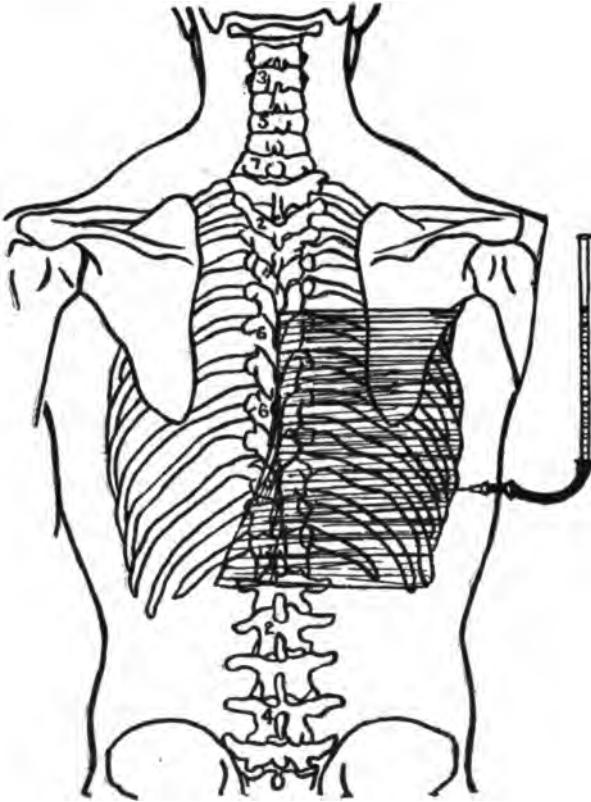
SITTING POSTURE

within the pleural sac, should prove to be of some value. By this simple device we are enabled to prove conclusively that which our other findings indicate.

The accompanying figures show at a glance the simple construction of the apparatus required. The entire apparatus consists of a good sized needle or trochar and canula, a rubber tube of sufficient length connecting the needle with the glass tube, which should be of medium caliber (No. 3 or 4) and about 15 inches long. After the
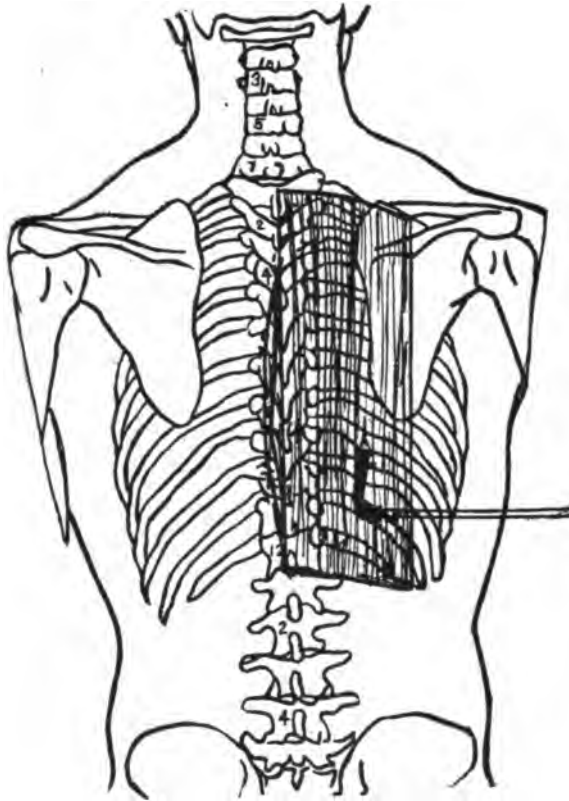
LATERAL POSITION

needle has entered the pleural sac the liquid will rise in the tube to the same height as the liquid in the chest; it will ascend in the tube oscillating synchronously with the respiratory movement; rising with inspiration, and falling with expiration according to the intra-pulmonary pressures.

When the liquid is well up in the tube, with the patient in the sitting posture, the tube may be approximated to the posterior tho-

racic wall and the ultimate height of the liquid marked and compared with the mark previously made as judged by physical signs. After this is done, it is well to make a re-examination of the chest above
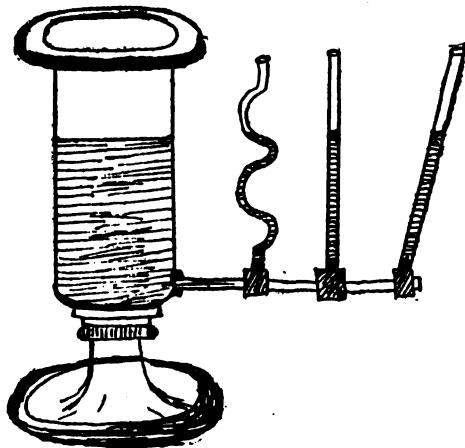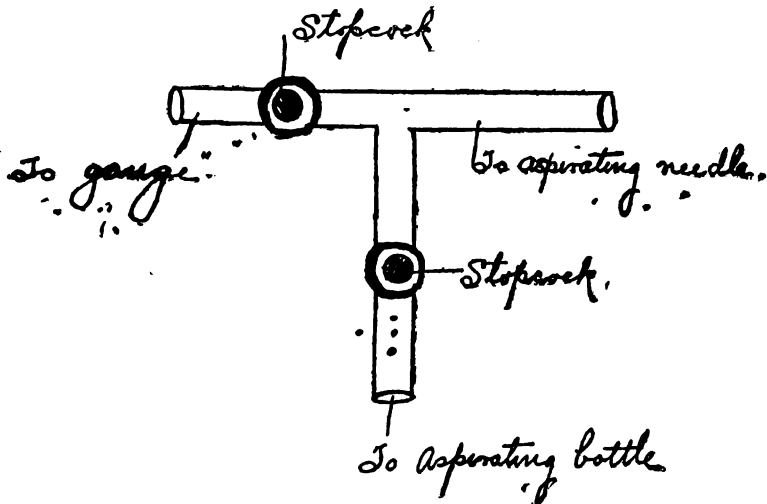
and below the "water line" for elicitation of the various physical signs.

In percussing over the effusion, the hand holding the glass tube will feel the imparted vibrations transmitted by the liquid. This disappears when the pleximeter finger is placed above the level of the liquid.

By the use of a three way stopcock in the apparatus, one of the arms may be attached to the needle, the other to the gauge, and the third to the aspirating bottle. With this we can estimate the amount withdrawn and the relative amount remaining in the pleural sac. The diameter of the connecting tubes should be fairly large, so that the adhesive pleural fluid will not coagulate within the tube.

The principle embodied in this is the one commonly known as that of liquid seeking its lowest level. In physics, it comes more explicitly within the law of equilibrium of same liquid in several communicating vessels.

When several vessels of any given form communicate with each other there will be equilibrium when the liquid in each vessel satisfies the laws of equilibrium of liquids.
These are:
I. Its surface must be everywhere perpendicular to the resultant of the forces which act on the molecules of the liquid.
II. Every molecule of the mass of the liquid must be subject in every direction to equal and contrary pressures.

THE DIAGNOSIS OF HOOKWORM INFECTION, WITH SPECIAL REFERENCE TO THE EXAMINATION OF FECES FOR EGGS OF INTESTINAL PARASITES

BY C. C. BASS
New Orleans, La.

There usually exist in severe and moderate hookworm disease, symptoms which suggest its presence, but mild infections often do not cause symptoms that can be demonstrated by our present methods, and our present standards of the limits of normal variations of health. Many patients with mild and even very mild infections will gain a few pounds and feel better generally following the expulsion of the few worms present, showing conclusively that they actually had slight variations from their normal weight and vitality, too slight,' however, usually to be demonstrated before treatment. (Fig. 1.)

Anemia is the most constant symptom of hookworm disease, but it is a symptom of so many other diseases and conditions that it aids little in the diagnosis of hookworm infection. An unexplained anemia should always suggest an examination of the feces. So should eosinophilia, which is usually present in moderate and severe cases. The anemia of hookworm infection is of the secondary type, and varies in degree from the severest in which the hemoglobin may be not more than 10 per cent. to a very mild anemia not demonstrable to be outside of the normal limits. The wide possible difference in the severity of the different cases is due to the fact that the number of worms may vary from one up to the lethal dose. They cannot reproduce in the intestinal canal, therefore their number may remain small.

The chronic anemia and intoxication results in more or less interference with development and vitality (Fig. 2), but many other diseases and conditions have the same effect. Hookworm disease should be thought of in considering anemic, under-developed children.

A history of "ground itch" or "toe itch" or "dew poisoning" from going barefoot is of much importance when obtained from

patients who know what this condition is. All the rural population of a hookworm district know it when they see it and have it.

After all, symptoms and history do not usually enable us to make the diagnosis except in moderate or severe cases in hookworm districts.

Proper microscopic examination of the feces for eggs permits a correct and certain diagnosis to be made in a few minutes, and is one of the easiest laboratory examinations to make.

Diagnosis by finding the worms in the feces. In the absence of a microscope one may give a course, 30 to 60 grains of thymol followed by a saline purgative, and examine the feces for the worms (Fig. 3) by diluting with much water and straining the liquefied feces through gauze, or by washing and sedimenting in a large vessel two or three times. The worms are easily recognized with the unaided eye. It should be stated that the worms cannot be found in the stools (except very rarely), without some anthelmintic has been administered.

Kind of feces preferred for microscopic examination. Inasmuch as hookworms live high up in the small intestine (duodenum and jejunum) their eggs are thoroughly mixed with the feces. This applies to all other intestinal worms, except possibly the oxyuris, the eggs of which are sometimes more numerous on the surface of formed stools because they are often deposited in the last few inches of the gut. Purgatives do not increase the number of eggs deposited, but dilute the feces and the eggs present. We therefore prefer the formed, or semi-solid feces without previous medication of the patient. Liquid feces may, however, be satisfactorily examined, but care should be taken to shake them up before examining.

Quantity of feces needed. When patients are requested to bring or send specimens for microscopic examination they often send the entire stool, which is inconvenient and unpleasant to transport, to say nothing of the unpleasantness of opening up and examining such large quantities and the inconvenience of disposing of such specimens after they have been examined. One or two drams is all that is necessary for a very thorough examination. The patient should be instructed specifically on this point. He should be told that only a small quantity is necessary, showing him on some convenient thing, such as a specimen bottle, what you mean by a small quantity, and

FIG. 4. Proper Size Preparation; Appears in Picture thicker than it really is.

FIG. 2. Moderately Severe Case of Hookworm Disease. Picture shows Underdevelopment and Emaciation. Age 16 years.

FIG. 1. Mild Case of Hookworm Disease. Age 13 years; anemic; gained 9 pounds in one month of treatment.

THE DIAGNOSIS OF HOOKWORM INFECTION

C. C. Bass

tactfully telling him at the time that larger quantities are not wanted.

Receptacle. Low, wide mouth bottles of about two ounces capacity are convenient for patients and are most convenient in the laboratory. Vaseline or quinine bottles answer very well. Those who have many specimens of feces brought them will be well repaid for keeping on hand proper specimen bottles with corks to be furnished their patients when requesting specimens of feces for examination.

Size of slides to be used. Many prefer large 2 x 3 or larger slides for this work. Personally I prefer the regular 1 x 3 slides. They are large enough to accommodate as much diluted feces as we usually care to examine at a time, and if not awkwardly handled there is no spilling or soiling of fingers, etc.

Making preparation. Ordinary toothpicks, preferably with one broad flat end, are very convenient to make slide preparations of feces with. Place two or three drops of water on a slide and take from the bottle with a pick or other suitable spreader a quantity of feces about the size of a match head. Stir this into the water until it is of a proper cloudy consistency, spreading it out on the slide at the same time. (Fig. 4.) A little experience teaches one how thick such a preparation should be, the thickest that can be examined well being the most satisfactory. (Fig. 5.) It is not uncommon for beginners to work with preparations too cloudy to be properly illuminated, or too clear or too small to contain much feces or many eggs if present. The soiled pick is dropped into the bottle. Cover glasses are not needed.

Microscopic examination. The low power of the usual laboratory microscope is used for the examination, unless occasionally a higher power is switched on for some special purpose. Magnification of 100 or more diameters is sufficient. The use of mechanical stages is largely a matter of habit and taste, but they enable the observer to more thoroughly go over the entire slide. The light should be reduced to that amount which gives the clearest definition to the particles in the preparation. The entire slide is systematically looked over either from side to side, or from end to end. Every such preparation from a case of moderate or severe hookworm infection will contain many eggs, but in the mild or very mild cases several such

slides may have to be examined before any eggs are found. This is also true of many of the other intestinal worm infections in which the number of eggs is usually small.

My own practice is to examine one such slide, and whether eggs are found or not, to proceed to centrifuge some of the feces and examine a slide made from the sediment.

Experience has shown in over 1000 carefully recorded experiments, in each of which one or more slides made in the ordinary way were examined and the specimens then properly centrifuged and examined, that from 25 to 75 per cent. of mild hookworm and other worm infections may be missed unless the latter method is employed. In previous articles we have discussed this method, but on account of its very great value it will be given here somewhat in detail. In fact, I do not consider that dependable negative diagnoses of worm eggs can be easily made without following similar methods. I also consider that absolutely negative diagnoses can be made when this method is followed, and without the examination consuming very much time.

The author's method of concentrating the eggs with the centrifuge. Feces consist of from 50 to 90 per cent. of bacteria and small food particles much smaller than worm eggs. Much of this material has a lower specific gravity than eggs. The feces also contain coarse particles as large as and often very much larger than any of the eggs. There is also present more or less heavy sand and crystalline material. The specific gravity of fresh hookworm eggs is about 1100. This varies within rather wide limits (1050 to 1250), under different influences, such as salt content or age of the feces, etc. In a high speed centrifuge these eggs are thrown to the bottom much more quickly than the other smaller and lighter particles. If the centrifuge is run longer the latter will finally be thrown down. On the proper appreciation and carrying out of this idea of centrifuging just long enough to throw eggs to the bottom, and no longer, depends success. After examining the slide made directly from the bottle, pour enough water in the bottle to dilute the feces several times. Shake until enough feces is dissolved to make a heavy, muddy suspension, about one to ten or more, but not necessarily until all the feces are dissolved. Strain this through a little gauze or a thin layer of absorbent cotton directly into the centrifuge tube. This gets rid

FIG. 3. Uncinaria Americana—Photographed to show size in inches. Males to the right; females to the left

FIG. 5. Microphotograph of Feces with a Hook-worm Egg in Center

FIG. 6. Large Quantity of Hookworm Eggs prepared by washing with Calcium Chloride Solution
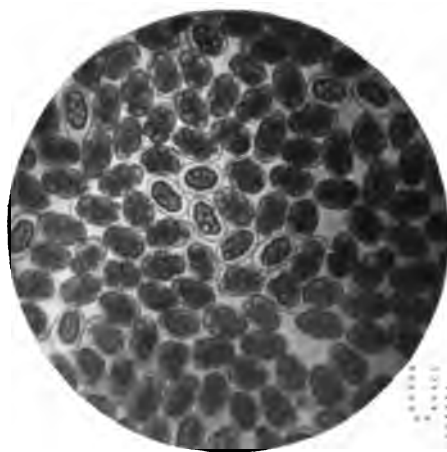
FIG. 7. Hookworm Eggs. Note Segmentation of Nuclei, Shape, etc.

THE DIAGNOSIS OF HOOKWORM INFECTION

C. C. Bass

of the coarse particles. A convenient way to dispose of the soiled cotton or gauze is to push it down into the bottle with a convenient glass rod. The centrifuge should be run only as long as it has been previously found necessary to run this particular centrifuge to throw the eggs down. It is best to centrifuge the first time twice as long as the working time of the centrifuge, because the specimen is thick, and eggs are thrown down more slowly. Now pour off the supernatant fluid, leaving the sediment, which, it will be noted, is only a fraction of the original bulk of feces. Refill the tube with water, shake, and centrifuge again. Those who want to avoid soiling their hands may stopper the tube with a proper new cork. The supernatant fluid is again poured off, the tube refilled, and centrifuged, and the process repeated, until there is little or nothing removed by the washings, usually three or four times.

The sediment is now taken up with a pipette and spread on a slide and examined microscopically. More or less fecal material of about the size and weight of the eggs will be present according to the patient's diet. Most of this can be gotten rid of by washing with different strengths of calcium chloride solution, having a specific gravity just below and just above that of the eggs, but this is recommended only when it is desired to collect large quantities of hookworm eggs for some special purpose. (Fig. 6.)

A centrifuge that starts and stops quickly like the best electric serves this purpose best. Good hand centrifuges are good; water machines poor. The time required to throw eggs down with a centrifuge running 3500 revolutions per minute is about four seconds. Each observer must know the time of his own centrifuge.

No amount of written description of the appearance of the eggs practicable here would inform the reader as much as a careful and proper study of a specimen containing many eggs. (Fig. 7.) It will be noted that the eggs are "ellipsoid," and each consists of three parts, a chitinous shell, regular in outline, a clear albumen space and a central nucleus in various stages of segmentation. Specimens over 24 hours old often contain embryos which can be seen moving around in the shell. Hatching does not occur until after 24 hours. Rhabditiform larvæ found before this time are usually strongyloides.

Differentiation between rhabditiform strongyloides and uncin-

ariæ is very difficult when only one larva is seen, but usually the age of the specimen, the presence of hookworm eggs, or the further fact that many of the strongyloides soon become filariform, enables one to make the differentiation. .

Those who cannot get specimens of human feces containing hookworm eggs will usually find just as good specimens from dogs. Most of the dogs in the south are infected, and probably this is true to a considerable extent in the north. The eggs of the dog hookworms cannot be distinguished ordinarily from those infecting man. Uncinaria Americanus eggs are about 60 microns long by 40 microns thick. They appear to the average eye when magnified 100 times about ⅜ of an inch long. The mental impression made by a careful study of the eggs in a rich specimen is better than written descriptions make. It is good experience to add small quantities of feces containing eggs to specimens of semi-solid feces from different sources, and then to examine these for the eggs.

THE RECOGNITION OF DIPLOMELLITURIA

By HEINRICH STERN

Visiting Physician, St. Mark's Hospital and the Methodist Deaconess' Home; Consulting Physician, Methodist-Episcopal (Seney) Hospital
New York

By diplomellituria I understand the contemporaneous or alternate occurrence of diabetic and nondiabetic glycosuria in the same individual. Although I have drawn attention to the combination of glycosurias of diverse origin in a communication to the Medical Society of the State of New York in 1904[1], its event remains universally unrecognized. The relative frequency, however, of its appearance—up to the present time I have seen at least fifty cases,—and the not unimportant fact of instituting proper therapeusis in the given instances, prompt me to reiterate my statements of six years ago.

Glycosuria is but a consequence, but a manifestation of a vari-

ety of causes. It is an enunciation of the diabetic state much in the same manner as it is a symptom of manifold disturbances of either ectogenous or endogenous causation. Its presence does not, a priori, stamp a person a diabetic, nor does its absence in the face of other pertaining manifestations offer conclusive proof of the non-existence of the diabetic state.

The glycosuric symptom of disease, other than diabetes, is an established fact. It appears and subsides, as its underlying factors supervene or vanish. It may, therefore, be transitory in character, but it may also attain a certain degree of chronicity. Cases of long-continued glycosuria, not modified by a diet free from sugars and starches, are nondiabetic, as a general rule. This is especially the case (excepting, of course, when the patient is in the last stages of diabetes) when progressive bodily decline ensues after a prolonged, unintermitted, antidiabetic regimen.

Apart from the dissimilarity of the clinical pictures of true diabetes and that disturbance of which it forms an integral part, nondiabetic glycosuria, as shown by me,[2] differ from the diabetic type in the following respects:

	Nondiabetic Glycosuria.	Diabetic Glycosuria.
Cause.	Demonstrable in most instances.	Unknown.
Duration.	Depending upon nature and degree of underlying factors.	Chronic.
Degree of intensity (uninfluenced.)	Mild, urinary glucose, usually less than 1%.	Higher, urinary glucose from 1% upward.
Amount of urine (uninfluenced.)	Normal, or but slightly (temporarily) increased.	Markedly increased (permanently.)
Nitrogen and ammonia excreted by urine (uninfluenced.)	Normal ratio.	Increased.
Influence of antidiabetic regimen.	Frequently none or limited. Gerhardt's reaction always negative.	Always. Gerhardt's reaction occasionally positive.
Influence of measures directed toward removal or modification of (known) etiologic substratum.	Frequently positive; cessation or decrease.	

Recalling that, in addition to these divergent points of the two general types of glycosuria, the classic symptom-complex of diabetes is either wanting altogether or only partly present in the nondiabetic condition accompanied by glycosuria, and remembering that in the majority of instances a demonstrable cause stands at the foundation of nondiabetic glycosuria, it is not at all difficult to discriminate clinically between the diabetic and nondiabetic forms of mellituria.

On the hand of these discrepant factors the occurrence of diabetic and nondiabetic glycosuria in one and the same individual may be recognized. We know that simple glycosuria is not infrequently superseded by well authenticated diabetes. In these cases, however, there is no contemporaneous or alternate, but a successive occurrence of both types of mellituria in the manner that the one subsides and the other, which is a manifestation of the diabetic state, becomes firmly and permanently established. Such instances, of course, do not belong to the domain of diplomellituria, by which term I wish to designate the synchronous or alternate occurrence of diabetic and nondiabetic glycosuria.

While diplomellituria is always of contemporaneous nature, it is clinically demonstrable only by the temporary abatement of one pertaining set of symptoms. It is characteristic of the affections that the syndrome subsiding rapidly, even if but temporarily, upon the institution of an antidiabetic regimen, is the one of diabetes. Hence it is mostly by the temporary decline or cessation of the diabetic syndrome that the manifestations of an accompanying or intercurrent disorder, including its glycosuric symptom, become evident or more conspicuous. The recognition of diplomellituria depends, therefore, on the alternate prominence of one set of symptoms, including the respective glycosuria.

If the nondiabetic glycosuria disperses simultaneously with the diabetic mellituria, it can hardly ever be recognized. Diplomellituria is just as much a simple glycosuria aggravated by the glycosuria symptom of diabetes, as it is a complication of the latter with simple glycosuria. The two types of glycosuria may be interdependent; in the majority of cases, however, they seem to occur independently of each other. They may be of synchronous production, for which, however, there is no proof; viewed from the clinical standpoint, one type of glycosuria antedates the other, as the symptom-complex con-

nected with the one always overshadows the syndrome, of which the other is an important factor.

Diplomellituria is the result of two concurrent or intercurrent affections of dissimilar character, having the one symptom, glycosuria, in common. There is no reason why glycosuria cannot reflect two pathologic conditions at any one time, as does for instance the symptom, fever. The extent to which each type of glycosuria contributes toward the diplomellituria can only be determined by the abatement of one type; as a general rule, however, diabetic glycosuria, as already pointed out, surpasses the nondiabetic form in intensity. A patient, for instance, exhibiting all the clinical phenomena of diabetes, excretes diurnally 3000 c.c. of urine containing 3 per cent., that is 90 grams, of urea, excessive amounts of other catabolic products, especially ammonia, and 5 per cent., that is 150 grams, of glucose. After pursuing an antidiabetic dietary for four weeks, all the manifestations of diabetes have subsided, the daily amount of urine is reduced to 1500 c.c.; the urea, notwithstanding the increased ingestion of proteid material, has not been augmented, which in reality means a decided reduction, the urinary ammonia has become markedly lessened, but the patient continues to excrete 0.33 per cent. glucose, that is 4.95 grams, daily. This amount in all likelihood, represents the glucose of nondiabetic production. Of course, in far advanced diabetes, a similar differentiation between the two great types of glycosuria cannot be attempted. Here the diabetic glucose—in spite of all dietary regulations—is as enduring as are the other manifestations of the diabetic state.

In uncomplicated diabetes, as long as it has not entered into its last stage, when it is eo ipso a complicated affection, the decrease of the glycosuria when under a specific diet, goes, as a rule, hand in hand with the obliteration of the other diabetic manifestations. The majority of cases of diabetes in which on prolonged dieting the *total* syndrome, save a slight glycosuria, disappears, are, it seems, complicated with disorders of which this very glycosuric condition is the consequence. This is especially the case when the patient, still under a strict regimen, continues to decline after the suppression of the symptom-group of diabetes.

In uncomplicated diabetes, systemic decline is not only arrested after the temporary abatement of the glycosuria and the other per-

taining phenomena, but the patient frequently gains in weight and strength even if the monotonous, though sufficient proteid-fat nourishment be continued for long periods.

Moreover, in diabetic urine, acetone and diacetic acid may occur in excess and betaoxybutyric acid even may make its appearance after prolonged dieting; in nondiabetic glycosuria, while the diet exerts but limited influence upon the excretion of glucose, I have never observed undue amounts of acetone or diacetic acid, nor could I ever detect the presence of betaoxybutyric acid which, in its clinical importance, is a much overrated factor.

Instances of diplomellituria may exhibit pronounced differences in their general symptomatology, but they all have in common a condition of true diabetes plus another disorder also characterized by a more or less conspicuous glycosuria. The additional disorder displaying the glycosuric symptom may be of the most discrepant nature; it may consist of a slight functional alteration of a rather unimportant organ, but structural decline or the loss of a very necessary organ may stand at its foundation. In many instances diabetes is the original affection; in others the nondiabetic glycosuria antedates the diabetes without any doubt. In nearly all the cases which I have observed the body-weight increased on the institution of a rigid dietary as long as the individual was in an actual diabetic condition; the moment the diabetes resumed its latent character and the phenomena of the concurrent affection appeared in the foreground, the restricted diet remained without any decided influence upon the absolute body-weight. Excepting in a very few instances, all the dietary restrictions could not completely suppress the low, accompanying nondiabetic glycosuria.

The nondiabetic character of the concomitant low degree of glycosuria may be evidenced: 1. By its continuation after the rapid suppression of the manifestations of a mild or moderately severe diabetes; 2. By its persistence after prolonged and rigid antidiabetic dieting; 3. By the increase in body-weight in spite of the persistence of the glycosuria; 4. By the normal, or nearly normal amount of urine eliminated after disappearance of the high degree of glycosuria; 5. By the excretion of relatively small amounts of urea during the continued ingestion of large quantities of nitrogenous substances; 6. By the greater prominence of certain, more than transitory, manifesta-

tions of disease other than diabetes, after the establishment of the artificial latency of the diabetic state.

One could adduce that the low degree of glycosuria is nothing else but the insuppressible portion of the diabetic glycosuria. To this must be remarked that the nondiabetic glycosuria may not only antedate the diabetic glycosuria and continue in unaltered form after subsidence of the diabetic manifestations, but that the diabetic phenomena are mostly of a type readily and completely responding to dietary measures, of a type in which the excreted glucose is the result of perverted amylolysis only.

That the concomitant low degree of glycosuria is not the consequence of perverted proteolysis of either or both the ingested material or the body albumin, indicating the graver and the gravest diabetic states, is peremptorily precluded by the progressive gain in weight and the associated diminished egestion of nitrogenous material after subsidence of the demonstrable diabetic phenomena.

The following points may be deduced from this communication:

1. Diabetic glycosuria is nothing more than the salient feature of a certain stage of the so-called diabetic state.

2. Glycosuria is a symptom, an enunciation of manifold other disturbances of ectogenous as well as of endogenous causation.

3. With the aid of varying clinical features we are enabled to differentiate between the diabetic and nondiabetic forms of glycosuria.

4. Diplomellituria is the result of two concurrent or intercurrent affections of dissimilar character, having the one symptom, glycosuria, in common.

5. The recognition of diplomellituria depends on the alternate prominence of one set of symptoms, including the respective glycosuria.

REFERENCES

1. Heinrich Stern.—On the Occurrence of Diabetic and Nondiabetic Glycosuria in the Same Individual. Transactions of the Medical Society of the State of New York, 1904, also American Medicine, March 19, 1904.

2. Heinrich Stern—The Glycosuric Symptom of Disease and its Medicinal Treatment. Journal American Medical Association, March 14, 1903.

THE MOVABLE CECUM: ITS DEMONSTRATION BY THE ROENTGEN RAYS

By GOTTWALD SCHWARZ

Director, Röntgen Institute, First Medical Clinic, University of Vienna

Vienna

About eighteen months ago Wilms published a rather extensive article under the caption "The movable cecum as a cause of certain cases of so-called chronic appendicitis" (Deutsche med. Wochenschr., No. 41, 1908).

In this article, which comprises the material of forty cases, Wilms declares that a normal appendix is very frequently presented by patients who have landed on the operating table on account of *chronic-*appendicular disturbances. After extirpation of the appendix the disturbances do not cease, as a rule. In these instances, we have not to deal with a diseased appendix at all, but, according to Wilms, with an abnormally long and movable cecum which causes sensations of pain by dragging on its own mesentery and on that of the appendix. Wilms does not perform appendectomy in these cases, but effects fixation of the cecum with, as he maintains, exceedingly favorable results.

The most difficult point involved in this question is that of diagnosis. Wilms does not attempt to diagnose the condition before he is confronted with the organ at the operation. The clinical symptoms are uncertain; they consist of loud gurgling sounds in the right side of the abdomen and the mobility of the contracted cecum.

The perusal of Wilms' article makes it evident to every one experienced in intestinal X-ray work that the latter may be employed to the best advantage in instances of movable cecum.

If a patient ingests Rieder's milk food to which has been added 40 grams bismuth carbonate, the ingested material soon leaves the stomach, passes quickly through the small intestine and reaches, after about four hours, the cecum which soon becomes filled with it. I wish to mention on this occasion that the ascending and mostly also the other segments of the colon are by no means found at com-

plete rest as one may assume from a recent paper of Holzknecht on "The normal peristalsis of the colon" (Münchener med. Wochenschr., 1910). Very numerous observations in this field have convinced me that there occur constant form changes of the haustra on the fluorescing screen. These changes ensue exceeding slowly; however, after an interval of ten minutes the contour is always changed.

The filling of the cecum with the bismuth-milk preparation, as already mentioned, starts after about four hours. Beginning with the seventh hour the cecum as well as the ascending colon are seen very well as a sausage-shaped shadow on the screen. It is plain that cecal mobility can thus be readily demonstrated. This could be done by palpation with the synchronous application of the Röntgen rays. This method would, however, be a source of possible error, which would arise from the varying tension and the varying thickness of the abdominal wall, the varying intra-abdominal pressure and the varying pressure employed by the examiner himself. Therefore I have selected another method to determine the mobility of the cecum. This method consists of the orthodiagram in the erect posture, and the orthodiagram in the left lateral posture of the patient, in which the cecum in accordance with its weight has the tendency to descend toward the middle line. This tendency will be the more pronounced the lesser is its degree of fixation.

I have examined a number of persons without manifestations of appendicitis by this method and have found the following types which may be classed as belonging to the normal forms of cecal mobility. (Figures 1, 2, 3, 4.)

Fig. 1.   Fig. 2.   Fig. 3.   Fig. 4.   Fig. 5.

In the lateral position the cecum does not extend at all or but slightly toward the median line, but it moves more or less upward.

I had, on the other hand, opportunity to examine a girl, twenty

years old, who gave a typical history of chronic appendicitis. Here, I could demonstrate that the cecum with its abnormally wide, and therefore readily filled appendix, had moved about 5 cm. toward the median line when the patient was placed into the lateral position.

The illustration (Fig. 5) impresses one as if the case corresponded exactly to that what Wilms understands by movable cecum.

COLOR REACTION OF HUMAN FECES WITH SUBLIMATE-ACETATE SOLUTION; ITS RELATION TO BILIARY AND INTESTINAL FUNCTION

By MORRIS SCHOTT

Cleveland, Ohio

Any aid which laboratory methods can furnish us in forming a diagnosis of pathological conditions is always of value, especially so if the tests are simple and devoid of delicate and laborious manipulations. We all know the importance of the usual and common tests in urology in the course of our daily practice, and that from their results we are often guided in our diagnosis and therapeutical indications. By faults of omission rather than commission, I think, we are often tempted to minimize the importance of the final utilization of our food and its physiological products, and while the per cent. calculation of the utilization of fats and carbohydrates, etc., is too tedious and complicated to be applied in a routine manner, we have in the application of the sublimate-acetate solution test a simple and positive guide as to the correct relationship between hepatic and intestinal function.

The results in this test will not only give us an indication of the disturbance in the functional balance, but will also indicate the therapeutic measures to be followed in a given case.

It is not my object to enter into the physiology of hepatic function; we are only to consider normal and pathological conditions of hepatic excretion and secretion in direct relation with clinical ob-

servations with which we come in almost daily contact, and in which the sublimate-acetate reaction can often be of great service. The sublimate-acetate solution reaction lays claim to merit not only on account of its simplicity of execution, being devoid of tiresome and delicate manipulations, but, especially, because the result is always constant and in proportion to the normal or pathological conditions existing.

Sublimate-acetate solution:

Acetic acid	1 c.c.
Corrosive sublimate	3.50 grams
Distilled water	100 c.c.

Technic. It is preferable to employ a fresh sample of the feces of about the size of a hazelnut; the specimen is to be thoroughly triturated with either cold or warm water, preferably distilled, in an ordinary glass test tube; after completion of the trituration 8 to 10 drops of the sublimate acetate solution are added. The result of the reaction will be more appreciated if the mixture is allowed to stand from 8 to 10 hours, but under the influence of the reagent we may even notice some immediate and special modifications, the chemistry of which has not yet been clearly determined. The change of color, both in the deposit as well as the upper liquid, is possibly due to the oxidation of the biliary pigment since a change of diet such as from proteids to carbohydrates, or vice versa, does not seem to modify in the least the result of the reaction.

We may consider the result of the test under two cardinal divisions.

1. The general appearance of the precipitate due to the reagent outside of the physical precipitate of the solid matter or residue and the density of the upper liquid portion. This will, of course, depend largely on the nature of the food ingested and gastric and pancreatic activity, but it has only a minor importance on the result or the general conclusions to be drawn from the test.

2. The resulting *color reaction* due to the sublimate-acetate on the precipitate and, to a lesser degree, on the liquid portion in the test tube. It is this color reaction which is of greatest importance in our clinical work.

I wish to emphasize before considering the abnormal color reactions that the result in a normal and healthy stool will always be

found constant, the deposit assuming a pink color (rose color of peach tree blossoms) while the liquid, though cloudy, is also pink. We can be sure that the normal pink coloration in the application of this test is *always* indicative of a healthy and normal relation between hepatic and intestinal physiological function, while a change or modification from the normal pink color would, besides one single exception of which I will speak presently, be an indication of a biliary intestinal disturbance, either functional or pathological in nature according to the degree or intensity of the reaction.

In early life, or beginning from the first to usually the second or third month and exceptionally as late as the tenth month, the lower portion of the digestive tract acquires a peculiar selective and reducing function either due to the aerobic or anærobic bacteria normally contained in the intestinal tract and inferior portion of the hepatic excretory ducts, or possibly due to a special secretion from the intestinal mucosa which changes the bilirubin into hydrobilirubin (stercobilin). When this reducing power has asserted itself the result of the sublimate-acetate test becomes positive, and the deposit as well as the liquid layer in the test tube will indicate by the pink coloration the establishment of normal relations between hepatic and intestinal functions. We may conclude that, when the equilibrium between hepatic and intestinal activity has once been established, the result of the test will be constant and any deviation from the normal color reaction will be an indication of a disturbed relation. The transformation of this reduction ability may be studied in individual cases by repeated application of the sublimate-acetate test; here, the intermixture of the normal pink and green colors (meconium type) may be observed during the time of evolution of the reducing power. However, as soon as the pink color has asserted itself, the reaction is constant under normal conditions and any deviation from the normal pink color must be considered a functional anomaly.

Color reactions.—I cannot repeat it too often that a normal pink coloration is indicative of a healthy biliary intestinal function. What, then, are the conclusions to be drawn from atypical colorations?

Green.—I have already stated that the reducing function does not exist in the first few months of infancy. A green color before establishment of the equilibrium is possibly due to physiological hepatic hyperfunction (in early life the liver is of relatively large

size and hepatic activity is relatively larger than intestinal activity). Biliary hypersecretion from any cause will be evidenced by the green color reaction. A bright green coloration is usually caused by an excessive or abnormal flow of bile; when the green is mixed with pink in isolated layers it is usually indicative of an enteritis.

White.—A white coloration points to a serious pathological condition, to a pigment acholia due to hepatic deficiency, stenosis or tumors within the duct, closure of the ampulla of Vater, compression tumors or malignant or mechanical causes. Retention of bile pigment may be complete with or without the appearance of icterus and will, in every case, modify the color results.

Bright-red, orange, violet, gray, yellow.—Departing from the normal pink color we may encounter exaggerated or inferior tints which may be termed anomalies by excess in the first instance and anomalies by default in the second. The shades or intensity of color have not yet been correctly separated or classified so that the clinical bearing of the various abnormal colorations has not been fully ascertained. However, a diseased liver will always disclose itself by the sublimate-acetate reaction if the latter is employed methodically. As soon as the equilibrium between the hepatic and intestinal functions is disturbed, there will be found a constant deviation from the normal pink coloration. Gray or yellow coloration of the deposit as well as the liquid may be considered modifications of the white color or of biliary acholia of a certain degree.

One more word concerning the liquid layer. Normally it should be opaque and limpid. In a healthy child the liquid is of maximum opacity and limpidity, while in a child with atrophic tendencies the liquid is clear and possesses greater fluidity.

On account of its simplicity and reliability this test will prove of great value in the general fields of medicine, surgery and obstetrics. Many European clinicians have employed the procedure as an aid in the prognosis of febrile and infectious diseases claiming that the pink coloration, indicating normal hepatic-intestinal activity, is a favorable prognostic sign while the appearance of any other color points to a less favorable prognosis.

TOXEMIA OF GONOCOCCAL ORIGIN

By TERRY M. TOWNSEND

Attending Genito-Urinary Surgeon, Red Cross Hospital

and

JULIUS J. VALENTINE

Assistant Attending Genito-Urinary Surgeon, Red Cross Hospital
New York

In the study of hitherto published cases of systemic disturbances due to gonorrheal infection one is struck by the indefinite and much discrepant classification. Instances are reported as "gonorrheal infection," "gonorrheal pyemia," "septicemia," "gonococcal bacteremia," etc., apparently without regard as to whether or not the general systemic disorder was called forth by the goncoccus per se or by an alliance with other bacteria, or by the toxins of the gonococcus. Wasdin[1] has remonstrated against such illogical classifications and suggests "gonoccic sepsis" as the most suitable term to denote those septic states which are due to the gonococcus that has gained entrance into the circulation. This term, however, cannot comprise that variety of cases in which the germ remains confined within the original area of invasion, and yet occasions systemic disease through its toxins.

According to Pearce[2] the infections may be classified into "toxemias," "septicemias," and "pyemias." The term toxemia should embrace only those types of intoxication which are due to the products of bacteria. "In a local infection," the same author maintains, "the organisms multiply at the point of invasion and cause, through the toxic substances which they elaborate, local tissue changes. At the same time, these toxic substances pass into the general circulation and produce certain constitutional symptoms; this secondary condition is best described by the term toxemia."

Toxemia as a clinical condition has been known for a long time, but only recognized as an entity in the last few decades. Souplet[3] is of the opinion that many systemic disturbances attributable to gonorrhea when the gonococcus could not be demonstrated extragenitally, are due to its toxins. Such general symptoms as lumbago, anorexia, anemia, etc., the same writer asserts, are present in the

majority of gonorrheal infections, but are only marked in the more severe types. Trekaki[4] furnishes evidence in support of this claim by the examination of fifty patients suffering from acute gonorrheal urethritis, but otherwise healthy. The rectal temperatures of 66 per cent. of these cases were between 38 to 38.5 deg. C. (100.4 to 101.3 deg. F.), and in a few as high as 39 to 40 deg. C. (102.2 to 104 deg. F.). These temperature elevations were independent of the ages of the patients or the intensity of the infection, and disappeared when their gonorrheas improved. These observations, in addition to the well-known leucocytosis present in every acute gonorrhea can only mean an intoxication. We have observed in a number of cases of acute gonorrhea an irritation, or congestion of the kidney which could only be explained by the excretion of a toxin or a hematogenous infection.

It is readily conceivable how this toxemia by causing lowered resistance in severe local infections can open the barriers to gonococcic sepsis and pyemia. Vack and Haury[5] report two instances of gonorrheal sepsis, the first of which can easily be explained by this theory. The patient gave a history of involvement of the right tarsal joint on the twelfth day of infection; his temperature fluctuated between 38 and 39 deg. C. From the twentieth to the forty-second day of infection his temperature ranged between 36 and 40 deg. C. Involvement of the joints of the left hand and foot followed, then dulness over the lobes of the lungs, ulcerative endocarditis ensued and finally death supervened on the eightieth day of the disease. Diplococci were found in the blood current as well as in the bronchial secretions. This may be interpreted as an instance where the toxemia was severe in the beginning and actually made possible the subsequent septicemia and pyemia.

When de Christmas[6] in 1897 published his experiments and deductions therefrom on the toxins of the gonococcus, he cleared up much that had been obscure. Rational explanations of many clinical observations were forthcoming and Souplet's theories were now considered as facts. These experiments proved the presence of a gonotoxin in every gonorrheal infection. They also proved that this toxin was extremely virulent in character, since an injection of a small quantity into rabbits and guinea pigs resulted in rapid and marked loss of body weight, even to twenty-five per cent. of the total. It

was also demonstrated that this toxin was colloid or albuminoid in nature, since its precipitation by alcohol left the remaining liquid inert. As to its more intimate character, some observers believe it to be an extra-cellular toxin, i.e., to yield a toxic substance only upon disintegration of the bacterial cell.

With this evidence, it is justifiable to believe that there is a certain amount of gonotoxin formed and absorbed in every case of gonorrheal urethritis, but that general symptoms obtain only in those instances where the formation and absorption of the toxin is in excess of that amount which can be disposed of by the infected individual.

It is a case of this type which we shall report and we have not observed its parallel nor is there a report of a similar case in the literature we have searched.

Mr. X. Y., age 44 years, occupation banker. Family and personal history good; has had the usual diseases of childhood with perfect recoveries. No previous venereal infection, but has been a moderate drinker of alcoholics for a number of years. Presented on August 1909, with acute gonorrheal urethritis; incubation period of four days. He was treated eleven days in the usual manner with various irrigations, but without the slightest amelioration of symptoms. Prostatic examination on the twelfth day of infection showed distinct involvement of the gland, the expressed secretion containing gonococci groups. The prostatitis did not respond kindly to treatment, though his urinary urgency, frequency and dysuria were somewhat relieved by hot rectal irrigations. Temperature elevation began intermittently on the twelfth day of treatment reaching 100 deg. F. evenings. This continued for two weeks. At four o'clock in the afternoon of the thirty-fourth day of treatment, he has a severe chill immediately followed by fever of 103 deg. F. Under antipyretic treatment the temperature declined to 100 deg. F. Nine hours later he had another chill followed by a temperature of 103.8 deg. F. At no time did the temperature and pulse part company. General examination showed normal chest contents, flat abdomen with all palpable viscera normal, foul tongue and breath, profuse perspiration, but no septic odor. Urinalysis showed pronounced urethritis, spermatocystitis, and intense prostatitis with congestion of the kidney. Blood examination evinced hemoglobin 90 per cent.,

red blood corpuscles 4.600000 per cubic millimeter, white blood corpuscles 22.480 per cubic millimeter. Microscopic examination of stained specimens showed practically normal features of the red blood corpuscles; microcytes, macrocytes and poikilocytes were present in small numbers only. Of the white cells, the polymorphonuclear neutrophiles were both relatively and absolutely increased, forming about 80 per cent. of all white blood cells. The large and small lymphocytes were somewhat diminished while eosinophiles were normal. No bacteria nor plasmodia were demonstrable. Local examination showed free urethral discharge; prostate large, but decidedly less hard and sensitive than at the examination twenty-four hours prior, and no fluctuation nor even a suspiciously softened area in the gland or its surrounding tissues.

The temperature fluctuated between 99 and 101 deg. F. until the following day (the thirty-fifth day of treatment) when two more severe chills and subsequent temperature elevations occurred, the first at ten in the morning, the second six hours later. At this stage, all hopes for surgical relief were abandoned, since the absence of a fluctuating area, the continued chills and exacerbations of temperature pointed not to confined pus but to systemic absorption of a toxin. The marked leucocytosis was not interpreted as meaning pus formation. Local and general treatment were discontinued and high rectal enemas administered. A six per cent. solution of magnesium sulphate at 70 deg. F. (500 cc. every six hours) was allowed to flow into the sigmoid. Within one hour after the first enema the patient's condition improved noticeably. After the ninth irrigation the temperature had declined to normal.

The only sequelæ were a temporary involuntary trickling of urine past the sphincters, and a spot of anesthesia about two by four inches on the outer part of the right thigh corresponding to the terminals of the lower portions of the external cutaneous nerve of the thigh. The former disappeared without treatment; the latter persists nine months after infection. Individual gonococci were present in the prostatic secretion at the last observation.

The loss of strength and body weight resulting from this illness were not commensurate with the duration of the attack nor the febrile elevation. This would tend to corroborate de Christmas' ob-

servations on the immediate and pronounced loss of weight in rabbits on the day following experimental injections of gonotoxin.

The damage to the nervous system due to gonotoxin is amply proved by many observations and is illustrated in the case just related. The absence of infections of the serous surfaces as well as subcutaneous abscesses, which have been present in most of the authentic cases of gonococcic sepsis, corroborates the microscopic findings as to the absence of gonococci from the blood stream.

The previous toxemias which we have observed were always in conjunction with acute gonorrheal prostatitis, and were sufficiently mild to respond to local treatment. The cases quoted in literature in which surgical relief has been attempted, have been attended by greater or less degree of failure. The use of autogenous vaccines or bacterins was precluded by the acuity and short duration of the attack and stock vaccines have been so disappointing in previous cases that their use was not considered.

REFERENCES

1. Wasdin, Editorial letter, Med. Rec., June 8, 1901.
2. Pearce, R. M., Modern Medicine, edited by Osler.
3. Souplet, La blennorhagie maladie générale. Thèse de Paris, 1892-93, No. 94.
4. Trekaki, de la fièvre dans la blennorhagie aigue. La Presse Médicale, Dec. 1, 1894.
5. Vack et Haury, Les méfaits de la blennorhagie, septicemie et pyohemie gonocoques mortelles. Archives de Médicine et Pharmacie militaires, 1907.
6. Christmas, J. de, La Gonocoque et sa Toxine. Annales de l'institute Pasteur, August, 1897.

THE RELATION OF VESICAL IRRITABILITY TO URINARY ACIDITY AND VOLUME

BY A. L. BENEDICT
Buffalo

The following study was made to determine how far the prevalent idea is correct that vesical irritability, not explicable by organic lesion, sexual reflexes, medication, etc., depends upon urinary

acidity. In order to eliminate, as nearly as possible, extraneous factors, nervous, motor, etc., the study was confined to the night urine; the definition of vesical irritability adopted for the present purpose being either that sleep was interrupted *apparently* solely by a vesical reflex with discomfort sufficient to induce evacuation, or that, on awakening either from some adventitious cause during the night or by the regular morning alarm, considerable vesical discomfort was experienced. The word *apparently* refers to the fact that an unrepeated sound, flash of light, etc., may have caused the awakening in any single case.

It is obviously impossible to avoid the personal equation, either in establishing standards or in applying them in practice. The above untechnical definition of vesical irritability was adopted as a criterion least likely to involve the personal equation and most generally applicable as a standard in a miscellaneous clinical experience. Five years have elapsed without the development of any indications of local, metabolic or general nervous conditions which would explain the vesical irritability. The general conclusion seems warranted that urinary acidity has very little connection with vesical irritability, either positively or negatively.

When the amount of urine reaches or exceeds 400 c.c., it becomes difficult to discriminate between a normal urinary reflex due to distension alone and an abnormal, though still purely functional and transient, irritability. It is significant, in this connection, to note that all of the accumulations of over 500 c.c. produced considerable discomfort, that they were due to full periods of accumulation or to an unusual amount of renal activity to care for ingesta, and that the retention of so large a quantity was possible only on account of the low acidity and consequent relative lack of irritating properties.

Still, it is evident from an inspection of the tables, that vesical irritability did not depend very directly upon either acidity, amount, or upon the product of these factors. Neither was any qualitative abnormality detected, though full examinations were made only occasionally. However, indican was tested for, and found absent, beyond a mere trace, whenever anything suggested the reasonable probability of finding an excess. No attempt was made to study the effects of relative concentration of salines, urea, etc. In only two instances was vesical irritability associated with especially high acid-

ity, viz. 110 c.c. at 115 degrees for 5¾ hours and 115 c.c. at 96 degrees for 5½ hours. But we also find that 160 c.c. at 100 degrees, 210 c.c. at 96 degrees and 215 c.c. at 95 degrees, were accumulated, even in a full night's sleep, without producing irritability. It is very doubtful whether the mere rapidity of excretion, without reaching an unusual amount, would have any influence on the reflex. In no instance was the bulk of urine sufficient to cause premature awakening and while, in several instances, accumulations of 400 c.c. and more were associated with considerable vesical discomfort (though of an acidity of only 30—13 degrees), we note an absence of this symptom in a considerable number of instances in which the quantity ranged from 400 to 460 c.c. and the acidity from 18 to 58 degrees for 400 c.c. and reached 35 degrees for the sample of 460 c.c.

In six instances, the condition of vesical irritability was immediately succeeded by a normal state, in which considerable quantities of urine accumulated:

BLADDER IRRITABLE			BLADDER NOT IRRITABLE		
C. C.	Degrees	Period	C. C.	Degrees	Period
55	36	2.15—3.15	400	18	3.15—10.15 (Sun.)
115	96	*23—4.30	200	88	4.30—8.30
175	83	24—3.20	140	52	3.20—8.20
80	50	23.30—1.45	260	23	1.45—8.15
155	48	24.30—4.30	400	9	4.30—8.30
240	50	24—4	220	40	4—8.20

In attempting an analysis of the instances of vesical irritability, we may group the cases as follows:

5 cases, 550—600 c.c., 13—17 degrees, not causing premature awakening (not even in the instance in which the period was from 24 to 7.30 o'clock) which may fairly be ascribed solely to distension.

4 cases, 360—460 c.c., 15—44 degrees, not causing premature awakening, in which we may consider the amount of urine to be an appreciable factor, in connection with some unknown predisposition.

10 cases in which the awakening was accounted for by extraneous causes, although there was also vesical irritability.

* 24-hour system used. 23 o'clock = 11 P. M.; 24 o'clock = midnight.

13 cases without assignable cause, other than the vesical condition.

VESICAL IRRITABILITY AS RELATED TO AMOUNT AND ACIDITY OF URINE

Table 1. Samples of night urine, collected occasionally, during period of a year, the accumulation producing no vesical irritability. Arranged in order of bulk of night urine.

C. C.	Degrees	C. C.	Degrees
110	65	270	50
140	52	270	74
160	100	280	57
170	52	290	53
170	89	295	65
170	89	310	56
175	44	310	70
200	84	330	49
200	88	340	22
200	57	345	52
210	96	350	25
215	95	370	27
220	70	370	35
220	85	380	57
220	98	385	50
230	55	400	18
230	59	400	20
230	64	400	36 (23.30—5.50, awak-
230	66		ened by patient
230	67		5.50—8.20, 270 c.c.,
240	46		7 deg.)
240	58	400	58
240	73	430	32
250	58	430	46
255	50	440	32
255	75	450	19
260	46	450	44
270	37	460	35

(Note that, in general, there is a reciprocal relation between amount and acidity, although with numerous exceptions, so that the elimination of acid units is not uniform.)

VESICAL IRRITABILITY AS RELATED TO AMOUNT AND ACIDITY OF URINE

Table 2. Samples of night urine, comprising nearly all instances of vesical irritability noted in a year. When no time is specified, the accumulation was for the ordinary period of sleep, the vesical irritability not being sufficient to cause awakening. Extraneous causes of awakening are mentioned, so far as known. Arranged in order of bulk of sample.

C. C.	Degrees	
50	75	(23.30—1) 80 c.c., 100° (1—4) awakened by noises.
55	36	(2.15—3.15) kept awake by noises.
80	50	(23.30—1.45) 260 c.c., 23°, no further irritability.
110	115	(1—6.45).
115	96	(23—4.30).
150	71	(2—7) room too warm.
155	48	(24.30—4.30) awakened by noise. 400 c.c. 9° (4.30—8.30) no further irritability
170	80	(24.8) awakened by noise.
175	83	(23.30—3.20).
185	63	(23.45—6.30) room too cold.
200	57	(23.30—6) awakened by noise.
210	73	(2—7) awakened by cold.
215	70	(23.30—7).
230	68	(23—4.30) awakened by necessity of moving bowels.
230	73	240 c.c. 65°, 270 c.c. 70°, 280 c.c. 56°, 280 c.c. 65°, 285 c.c. 52° (in above instances awakened at usual time but bladder irritable)
245	50	(24—4) 220 c.c. 40° (4—8.20) no further irritability.
245	60	(23.30—6).
270	44	(23—5) room too cold.
360	44	400 c.c. 25°, 440 c.c. 30°, 460 c.c. 15° awakened at usual time.
550	15	(24—7.30).
590	13	600 c.c. 16°, 600 c.c. 17° (23.30—8.15).
560	17	(2.15—8.15) banquet in evening previous.

Quain and other anatomists state that the normal bladder holds about a pint or 500 c.c. Luschka and Benle contradict the com-

mon belief that the female bladder is more capacious and hold that it is normally less so than the male bladder. It is obviously impossible to distinguish sharply between normal maximum fulness and overdistension and between overdistension and true dilatation. The writer once succeeded in accumulating 750 c.c., the bladder being distended to a decidedly uncomfortable degree. 600—650 c.c. have been accumulated several times. Under ordinary circumstances, the vesical reflex, while not urgent, suggests urination when 250 c.c. have been accumulated, so that the urine is passed 4—8 times a day. The night urine is usually held for 6—8 hours but, as by common custom, little food or drink is taken for two or three hours or more before bed time, and as all organs are relatively quiescent during sleep, the amount of urine is proportionally less than for other periods of the day. The obtunding of cerebral and cord centers and the lack of motion also render the bladder more tolerant at night. Many persons observe that the motion of a sleeping car or a boat produces a vesical reflex which would not occur with a similar quantity of urine in a quiet place.

English clinicians, especially Dickinson, have called attention to the fact that a relative increase of the night urine is rather diagnostic of interstitial nephritis and, especially, of its incipiency. But, in the absence of signs of arteriosclerosis and urinary abnormalities, it may well be that relative excess of night urine is not so much an indication of developing renal degeneration as of habits of eating and drinking which are likely to end in nephritis. A habitual excess of night urine, from any cause, or a relative intolerance on the part of the bladder, is apt to lead to a physiologically and psychically interesting form of mild somnambulism, in which there is sufficient cerebral control to prevent wetting the bed or carpet, but in which there is no subjective consciousness.

DIAGNOSIS IN CHRONIC AILMENTS

BY ALBERT C. GEYSER

Professor of Physical Therapeutics, Fordham University; Clinical Instructor
in Radiography and Radiotherapy, Cornell University; Lecturer
in Electrotherapy and Radiography, N. Y. Polyclinic
School and Hospital, etc.

To the casual observer the title of this article seems almost paradoxical. It may be assumed that by the time any disease or ailment has become chronic at least the diagnosis should have been established. Therapeutics may and will perhaps forever differ, because there are always several therapeutic agents that would accomplish exactly the same results under similar circumstances. However much men may differ in the therapeutic application of any one or more agents, there can, at least there ought to be, no difference in the diagnosis. The disease factor is an existing entity and cannot be influenced by the personal equation of the diagnostician. Why then should there be a question as to the diagnosis of the chronic diseases? The disease at some time or other must have been in an acute stage, and during this state was either not treated, and therefore a diagnosis was not essential,—or the disease during its acute and subacute stage was treated, and then a correct diagnosis was, of course, all important. If now we claim that our diagnosis during the acute stage was a correct one, then the existence of the chronic state of the disease will illustrate the failure of our therapeutics, for had our therapeutics been proper we could not have had a chronic stage of the disease.

Sir Astley Cooper once said: "Some diseases get well without treatment, some with treatment, and a great many in spite of treatment."

If this be true, and it does seem as though it was, then it makes but little difference what the diagnosis is, and still less difference as to the therapeutics. In the light of more modern and almost scientific medicine we certainly have a right to say that with "correct diagnosis and proper therapeutics almost every disease is curable but not every patient."

From this it is apparent that I entertain some doubts as to the correctness of the diagnosis during the acute stage of the disease that now has become chronic. As a matter of fact, if about four times as much time would be spent by the attending physician in diagnosis he would save more than double that time in therapeutics. A correct diagnosis usually narrows the treatment down to a very few agents, and it is merely a matter of expedients which particular method of therapeutics we select in any given case. Admitting for the sake of argument that it was difficult, nay even impossible, to arrive at a correct diagnosis during the acute stage of the disease, what then are our chances during the chronic stage? Again we must bear in mind that the patient during the chronic stage is not at all suffering from the acute disease any more but rather from some changes that have taken place in the economy, as the result of the acute condition. In other words the symptoms have entirely changed. Hence we speak of symptomatic treatment, meaning thereby the amelioration of the various symptoms as they may be complained of by the patient. If we give this so-called symptomatic treatment a passing notice we must admit the absurdity of it and our own inability to do better. Here we have a patient whose whole system has been more or less changed by the processes of disease and repair, whose manifestations and interpretations are anything but normal. Let us take for instance the neurasthenic, the hysteric and the hypochondriac. If we were to administer treatment according to the interpretations of their feelings our already overcrowded therapeutic armamentarium would certainly be inadequate and our results even more chaotic than they now are. In refutation it might be said that these three conditions are not truly disease conditions but rather psychic conditions; let us bear in mind though that "that the man or woman who thinks he or she is sick, and is not, is sick indeed." I venture to say there is not a single symptom or manifestation of disease without some underlying cause. The first step in therapeutics is to "remove the cause," for no matter how often or how much we may treat the symptoms, unless the underlying cause is removed, the same symptom must again appear though changed through the administration of our symptomatic treatment. It is the cause of the symptoms and not the symptoms themselves that require our attention. To make it more clear let us suppose a

patient complaining of nothing more than a headache, which may be due to a toxemia from intestinal absorption, derangement of the gastric function, changes in the circulatory system, changes in the kidneys, defects of the visual apparatus, frontal sinus disease, nasal or middle ear lesions, uterine lesions, intra-cranial tumors, congestion or anemia of the brain or its coverings, syphilitic changes, constipation, and a host of psychical impressions. Certainly with even a slight thought upon the subject, we must become convinced that the cause must be discovered and removed before any real benefit can be expected from our therapeutic applications.

As has been stated, in chronic diseases we are more often suffering from some obscure cause and the symptom-complex is frequently referable to some undiscovered lesion bringing forth rather reflex manifestations than directly associated conditions.

Pain is an expression of some interference with a sensory nerve central or peripheral. Without the intervention of a nerve of sensation there could be no sensory impression.

Paralysis or motor inability necessitates the interference with the function of a motor nerve, either in the nerve itself centrally or peripherally, or joint and muscle changes preventing the motor nerve from carrying out its physiological function.

Changes in tissue and organs in general are presided over, not by the sensory nor the motor nerves, but by that third system of nerves, the sympathetic. All growth and repair of tissue is under the direct control of the sympathetic system. All injuries, traumatic, chemic, or biologic, aside from the pain, loss or increase of motion, is under the direct influence of the sympathetic nervous system. It is this system that takes cognizance of the changes that have taken place and under its control through the vaso-constrictors and dilators, the process of repair is more or less perfectly carried out.

The Sympathetic Nervous System. Beginning with the Gasserian and otic ganglia within the cranium we have placed upon the anterior and lateral aspects of the spinal column a chain of similar glands. In the cervical region we find three, the superior, middle and inferior cervical ganglion, while below this region there is placed one ganglion corresponding to each of the vertebræ. These two chains of ganglia are connected so as to unite in the lowest ganglion, the ganglion impar. From each one of these ganglia fibers

are given off to pass into the cerebro-spinal column through the nervi rami communicanti. Other fibers are given off at various levels of the spinal cord to follow the course of the blood vessels and in this way the sympathetic nervous system is brought into close contact with every single part of the body. In fact every individual cell is under the direct influence and control of this system.

If then a single cell within the body was to receive even the slightest injury it would become the duty of this system to at once recognize such injury and by sending some sort of a stimulus to the corresponding ganglion of the cord, and start the process of repair either by limiting, or, as is more apt to be the case, to increase the local blood supply to the part.

Each organ within the body has located somewhere along the spinal column one or more of these sympathetic ganglia which neither rest nor sleep, but continuously, like faithful sentinels, attend to the least beck and call of the particular region or organ with which they are connected. Let us suppose for a moment now that something has gone wrong with the stomach, then the ganglia located at the third, fourth, fifth, sixth and seventh dorsal vertebræ would at once be made aware of such an injury and within these ganglia all would be excitement much as though some fire station should receive a hurry call or to hold itself in readiness to give assistance at the tap of the next bell. Let us carry our imaginary excitement a little further by assuming that the call bell has struck, again and again, yet with all the force working the apparatus will not be moved one inch, the call bell keeps on ringing, the men frantic at their work now gradually cease and drop from sheer exhaustion, no help has been sent and the destruction by fire goes on. So in our sympathetic ganglia, if the injury is great enough or sufficiently often repeated, these ganglia after a valiant effort are obliged to refuse in order to save themselves from utter destruction. Such stations along the spine are known as sympathetic spinal centers. Many of these centers are well known as the center for respiration, the center for cardiac activity, the center for the liver, large and small intestines, the center for parturition, micturition and defecation. During the last few years laboratory research has enabled us to locate more or less definitely nearly all the various centers along the spine. In the first part of this paper we saw that this sympathetic

nervous system sent its branches wherever blood flows, it so happens that a branch of these ganglia controls the blood supply to the skin, immediately overlying the region of the particular ganglia in question. That is to say, if we are dealing with a lesion of the stomach, for instance, the pyloric end of the stomach, then the area over the fourth and fifth dorsal vertebræ would be supplied by a branch of the sympathetic from the ganglia, because the ganglia located here control the pyloric end of the stomach. Would it seem very far fetched if in carcinoma of the pyloric end, or any other chronic lesion at this region, we should also find some small involvement of the region surrounding the center along the spine? We know that this does happen. I can do no better than refer to any one of the more modern text books on diagnosis where complete charts will be found giving locations of painful areas along the spine associated with various internal disorders. In its distribution along the spine the entire sympathetic system can be divided into three main divisions, viz., the cervical brain, extending from the atlas to the fifth cervical vertebra; the abdominal brain, extending from the first dorsal to the second lumbar; the pelvic brain, extending from the ninth dorsal to the fifth lumbar. While these divisions are only arbitrary, they serve as a guide to the distribution of the main plexi and the particular area they control. In order to more thoroughly appreciate the diagnosis of chronic ailments it will be necessary to keep in mind the fact that we may and usually do have symptoms in some organ, yet that organ is perfectly healthy and so requires no therapeutics, it is simply a reflex symptom. A gravid uterus may cause uncontrollable emesis, the gastric organ is not at fault, yet the vomiting is the only symptom the patient complains of. Intestinal parasites may cause convulsion, yet no sign of worms may be present. Ocular defects have been known to be the only cause for epilepsy, yet never suspected. Lumbago, a frequent condition during stone in the kidney or bladder, yet there may be nothing wrong with the lumbar region itself; headache due to some gastric disturbance, hemorrhoids and constipation furnish reflex symptoms too varied and numerous to mention. This array serves once more to impress the necessity of locating and treating the cause and not the symptoms.

How to locate the cause. We thoroughly appreciate now the

fact that every organ in the body is controlled by the sympathetic nervous system, and that this system has located near the spinal vertebræ certain ganglia; that these ganglia act as substances or centers from which impulses are sent out. We also appreciate the fact that the area surrounding these centers shares in the immediate condition of the centers themselves. If then any one organ in the body is abnormal, the corresponding center must also be abnormal. Now it is simpler to find the abnormal center per se than to find the abnormal organ per se. Knowing the center we can easily locate the organ and so find the underlying cause for the ailment.

Apparatus necessary. Procure a high tension faradic coil with not less than 5000 feet in the secondary winding; personally I never use less than 7,000 feet, and lately I had built for me a coil with eight thousand feet of wire and two interrupters in the primary. Why such a length of wire and why two interrupters instead of one? The greater the number of turns of wire surrounding the primary of a faradic coil, the oftener are the lines of force cut and therefore the greater the tension or penetrative power of the current. The more rapidly the current is interrupted the less is the sensation to the sensory nerves, and so this kind of a current can be used to its fullest extent without practically a sensation or a muscular contraction to the patient. For these reasons the error should not be made of using a short coil, for it cannot produce the desired results, but causes pain and severe muscular contraction only.

Technic. The patient is placed in the horizontal posture upon the examination chair or couch, the spine is bared and uppermost. A large felt electrode, not less than 6—8 inches square properly moistened, is placed above the umbilicus so as to cover the abdominal brain or solar plexus. This pad is attached to the positive end of the coil, while the negative end is attached to an ordinary sponge hand electrode not over two inches square. The examining electrode should be fitted with an interrupting device.

The current is now turned on to about one half of its possible strength and the sponge brought into contact with the patient in the cervical region of the neck. The interrupting device is released and the current flows. The patient is now consulted as to the feeling of the current, which is usually not at all disagreeable. If everything is working satisfactory, the electrode is gently pushed up and down

the entire length of the spine about 6—8 times with moderate pressure only. The patient should now tell the examiner if the current is felt more in one place than in another. If it is not felt anywhere turn on full strength of the current and proceed as before. If the patient shows by wincing that there are some tender spots, mark them with an indelible pencil. The current may now be stopped and to our surprise just where the patient complained of feeling the current, there appear bright red areas from the size of a 25 cent piece to the size of the palm of the hand.

These spots stand out in bold relief upon an otherwise white background. This phenomenon must have a cause and we must account for its occurrence. Immediately underneath this red area are located spinal centers which, perhaps, have been for a long time laboring under great stress from the impulses sent there from some abnormal organ. Now, when this hypersensitive area is irritated with the proper kind of a current, this same area will respond by an increase in the local blood supply long before the rest of the skin in the immediate neighborhood is even aware of the presence of the irritant. By looking at our chart we find which part of the body or what particular organ is associated with this center and so find the abnormal or diseased organ. Once having located the organ or region it usually is not very difficult by a process of exclusion to arrive at the correct diagnosis.

I will cite only a single case to show the value of such a spinal examination. Miss E. G., 16 years of age, arrived in this country in October, 1909, from Germany, possessing that almost typical well rounded contour and rosy complexion. She seemed to enjoy the best of health until about Easter last, when she began to feel tired and grew languid, developing a slight hacking cough with a moderate amount of fever, loss of appetite and general malaise. By June, 1910, she had lost perceptibly in body weight, felt weak, and was easily fatigued, and developed night sweats and a vague pain in all her limbs. Tuberculosis was suspected and patient advised to leave the coast and live in the interior. Her time for departure was set for July 1st, 1910. On June 21st, she was brought to my office for an X-ray examination of the lungs. The X-ray showed not the slightest trace of even a beginning tuberculosis, not even the bronchial glands were enlarged.

A spinal examination was then undertaken with the result that a marked reaction took place at the 5th and 6th dorsal interspace with a secondary reaction equally marked at the first and second lumbar regions. These two centers are the controls for the kidney. This led to an urinalysis with the result that albumin and casts were present. A history of an acute onset with chills and fever, some few weeks previous had been looked upon as due to tonsillitis, there was an occasional diarrhea and a tendency to dropsy over the tibial region, but was not severe nor constant. The diagnosis was changed to subacute nephritis, and treated accordingly.

It is, of course, possible that this case might have recovered under a treatment for tuberculosis, and neither the physician nor the patient would have been any the wiser, but it might have gone from bad to worse. If this patient had recovered at some institution it would help to swell the records and statistics as a recovered case of tuberculosis, although the patient never had it.

Just a word about such diseases as hysteria and neurasthenia. It seems as though two such diseases ought to be differentiated easily, but, as a matter of fact, they are not, especially when the main symptoms of both are more or less present or absent in the same individual. How will a spinal diagnosis help us then? Simple enough, if one stops to think before proceeding with the mechanical part of the work. Neurasthenia is an asthenic condition of the nerves due to debility or weakness of the nerve centers, not in any one particular spot, but a general exhaustion. When the sympathetic nervous system has for a long time taken notice of such a condition it is ready to respond to almost any kind of a stimulation or irritation, and thus, in neurasthenia the entire length of the spine will present one red streak. If the examination be made with extreme caution, we will frequently be able to locate the underlying causes by watching the manner or order in which the spine turns red.

In hysteria we have the opposite condition; a more or less perverted state of the mind due in most instances to some slight underlying physical cause. When a spinal examination is made, hardly a single spot or reaction is seen even after prolonged irritation, because the psychical element predominates over the physical, but even here we notice that the reaction, if it does appear, is very insignificant, out of all proportion to the gravity of the symptoms as com-

plained of by the patient. Nevertheless, we again are led to the source of even this disease.

I do not wish to convey the impression that this method of diagnosing disease is a substitute for any other method, on the contrary, by pointing out the organ at fault all the other methods must be brought to bear until by a process of elimination the final and true pathological condition becomes known.

General Retrospects

DIAGNOSIS AND PROGNOSIS OF CHRONIC DISEASES OF THE CECUM

(Based upon the Literature of the last three Years)

BY HERBERT E. STEIN

Assistant Gynecologist, N. Y. Polyclinic

New York

LITERATURE

LAWRENCE, W. H.—Functional derangement of the cecum. (Internat. Jour. of Surg., Sept., 1907.)

HARVEY, T. W.—Dilatation of the cecum. (Med. Rec., Sept. 21, 1907.)

NAUMANN, G.—Tvenne fall af appendicit, som bada företedde ett mera ovanligt läge af caecum. (Hygiea, 1907, Centralblatt f. d. Grenzgebiete d. Med. u. Chir., Vol. XI, 1908.)

FOWLER, J. K.—Malignant disease of the cecum. (British Med. Jour., March, 1908.)

SYMONDS, C. J.—Malignant disease of the cecum. (Lancet, April 4, 1908.)

JOPSON, J. H.—Primary tuberculosis of the cecum. (Annals of Surg. Vol. XLVII, 1908.)

WILMS.—Das Coecum mobile als Ursache mancher Fälle von sogenannter chronischer Appendizitis. (Deutsche med. Wochenschr., Oct. 1908, p. 1756.)

JUWORSKI AND LEPKOWSKI.—Ueber die Palpation des Wurmfortsatzes und Caecums und die diesbezüglichen schmerzhaften Punkte. (Prceglad lekarski, No. 4, 1908, Centralblatt f. d. Grenzgebiete d. Med. u. Chir., Vol. XI, 1908.)

WILMS.—Appendicitis chr. und langes Caecum. (Allg. med. Centralzeitung, 1908.)

CUMSTON AND VANDER VEER.—Diagnosis and treatment of carcinoma of the cecum. (Annals of Surg., Vol. L., 1909.)

ELS. H.—Zur Kenntnis der ileo-caecalen Tuberkulose. (Beiträge z. klin. Chirurgie, Vol. LXIII, 1909.)

ROGERS, R. O.—Tuberculosis of the cecum. (Surg. Gyn. and Obstet., Vol. VIII, 1909.)

KLOSE, H.—Klinische und anatomische Fragestellungen über das Coecum mobile. (Beiträge z. klin. Chirurgie, Vol. LXIII, 1909.)

CORDES, F.—Ueber primäre Typhlitis. (Beiträge z. klin. Chir., Vol. LXIII, 1909.)

RÖPKE, W.—Akute primäre Typhlitis. (Archiv f. klin. Chir., XCI, 1909.)

FISCHLER, F.—Typhlatonie. (Mitteilungen aus d. Grenzgebieten d. Med. u. Chir., Vol. XX, 1909, p. 663.)

Out of 800 ambulatory cases whose anamnesis did not lead to any abnormality of the cecum *Juworski* and *Lepkowski* were able to palpate the cecum in 55 per cent. of the cases and one-third of these were tender. A differential diagnosis of the acute diseases of the cecum is practically impossible. Inasmuch as the treatment of acute primary typhlitis and that of acute appendicitis is identical and surgical if the condition is at all alarming, we may dismiss this phase as being of no especial import on this occasion.

A thorough investigation, however, of the chronic affections of the cecum have brought about not only a different conception, but also a change in the prognosis and treatment of these hitherto indeterminable diseases. We may classify them as, abnormal locations, abnormal mobility and size, hyperirritability, tuberculosis and malignancy. *Naumann* reports one case in which the ileo-cecal junction was high up in the iliac fossa, the colon running off transversely right from the start. In the second case the cecum was situated under the right lobe of the liver. These conditions may easily be mistaken for dilated gall bladders.

Wilms states that one out of every four or five cases of so-called appendicitis never had a severe acute attack, but a condition very characteristic of abnormal mobility of the cecum. The symptoms are mild or severe colic, starting with a heavy sensation in the region of the cecum, referred up the ascending and down the descending colon or to the back, sacrum or thigh, and lasting from one quarter of an hour to two hours. An important feature is the normal or subnormal temperature. Partial meteorisms may accompany the attacks which are usually preceded by constipation, and end with frequent stools. They occur intermittently with free intervals of hours, weeks or months, are influenced by the quantity and quality of food, but not by bodily exercise; constipation, standing and sitting increase the colic, lying down diminishes it. Physical examination usually elicits tenderness over McBurney's point, and if the cecum is contracted it often feels hard as a tumor which is movable from side to side, palpation frequently causing gurgling. To make a positive diagnosis we must resort to a bismuth radiograph. Normally three hours after ingestion the shadow is seen in the lower ileum, after four hours in the cecum and ascending colon and in twenty-four hours in the

rectum. Pari passu in cases of movable cecum, the shadow is not advanced from the cecum even after two or three days. The symptoms are caused by the long cecum dragging on its mesentery or on that of the appendix. The prognosis is excellent if the condition is recognized and the proper treatment of cecal fixation, instead of appendectomy, performed.

Fischler reports 41 cases in which there existed an isolated dilatation of the cecum, the entire picture suggesting chronic appendicitis, but appendectomy did not relieve the symptoms. The condition is probably a localized catarrh producing muscular insufficiency. By analogy, according to *Lawrence,* the cecum may be considered a second stomach, both anatomically and physiologically. The small intestine opens into it at right angles very much as does the esophagus into the stomach. The peristaltic wave, the same author maintains, is broken at the ileo-cecal junction much as is the case at the cardiac end of the stomach. The latter organ must do its own emptying, and if the burden is too great a train of symptoms results, caused by the chronic congestion of the lining mucous membrane, and terminating in dilatation. This is likewise the case with the cecum. As the blood supply of the intestine gradually diminishes towards the cecum, and as the valvulæ conniventes disappear before this point is reached, it can well be seen that peristalsis becomes weaker towards the cecum, and when the partially digested food reaches the cecum there can be little momentum behind it. The food residue, therefore, in the cecum must depend upon the integrity of the cecal muscular walls for propulsion. The function of the cecum also resembles that of the stomach, but in a lesser degree. It serves as a reservoir for the partly digested substances in order that absorption may be completed. If there is an obstruction or muscular atony there will first be stagnation of food products with fermentation, then congestion of the cecal walls, perversion of secretion and absorption and slowly increasing dilatation.

Symptomatically considered, the previous history does not reveal any characteristic attacks, but a sense of discomfort, fulness or bearing down in the right lower quadrant of the abdomen is the most notable feature. There are no pain transmitting nerves in the small intestine or colon, but the peritoneum is well supplied. Therefore, if there are sensations of fulness or dragging they are probably the result of intra-intestinal disturbances; however, if there is a sharp pain and associated with rigidity of the rectus it is caused by peritoneal irritation, and as the appendix is the organ which most frequently in this locality produces peritonitis, we may thus be aided in making a differential diagnosis. There is usually also a high tympanitic percussion note over the cecum. Pressure upon the cecum often propels the gases and relieves the patient. Borborygmi are

merely due to relaxation of the cecal walls together with accumulation of gases. There is of course no rise of temperature. Examination of the stools may also throw some light on the condition.

Chronic cecal dilatation must be differentiated from acute appendicitis, chronic appendicitis, movable kidney, diseases of the adnexa, enlarged gall bladder, psoas abscess in children, hernia and twist or stone of the ureter. Acute appendicitis can be differentiated by its acute onset, tenderness at McBurney's point, no tumefaction, no meteorism, temperature elevation and abdominal rigidity; chronic appendicitis by absence of tumor and relief after defecation; movable kidney by absence of gurgling sounds; diseases of the adnexa by vaginal examination. The remaining rarer conditions are usually readily differentiated.

The condition of cecal dilatation is one of long development and indefinite duration, but proper treatment affords great relief.

In 1890 Durante first called attention to the great macroscopical similarity between tuberculosis and cancer of the cecum. In the following years Billroth, Hartmann, Pilliet, Czerny, Sonnenberg and others confirmed this observation. According to Lesueur the cecum was involved in 82 per cent. of all cases of intestinal tuberculosis; according to Fenwick and Dodwell in autopsies of 2000 cases the cecum was involved in 85 per cent. of the cases, and in many instances the ileo-cecal region only.

Cecal tuberculosis may occur in two forms; one hyperplastic, which is primary and rare, only 85 such cases having been collected from the literature prior to 1898; the other, the ordinary intestinal tuberculosis, involving the mucous membrane of the ileum and cecum and is usually secondary. The first or surgical type has its origin in the submucosa of the cecum, involves the lymphatics and produces an inflammatory reaction; this constitutes the sclerous involvement and therefore the walls of the cecum become enormously thickened, thus limiting the tuberculous process. The first type causes early stenosis, the second rarely does, but forms earlier abscess, adhesions and fistulæ. The symptoms are of slow onset, constipation alternating with diarrhea, occasionally blood in the stools, and later colic occurring a few hours after eating owing to the obstruction. In the hypertrophic type an oval or cylindrical mass may be detected, of uneven surface, first movable, later adherent, and giving a dull percussion note over its center. The diazo-reaction is usually present.

The prognosis of the hyperplastic type of cecal tuberculosis is good; many so-called cases of cecal carcinoma were probably of this type of tuberculosis.

According to Cumston and Vander Veer 2 per cent. of intestinal carcinomas are cecal in location. The two chief signs are the presence of a tumor and early intestinal colic due to obstruction.

The tumor is hard, well defined and so close to the abdominal wall that it may be grasped and lifted forward. It is movable in every direction, the upward movement often being accompanied by a gurgle due to air going through the stricture. As it is moved downward it swings toward the median line. The mobility varies with every individual, and may be limited by adhesions of previous appendicitis. The colic may at first be brief, later sharp and accompanied by gurgling, and situated first centrally and later in the cecal region. Food taken at the time of the colic may be vomited without previous nausea. In cases in which the tumor began above the valve or posteriorily the colic may be entirely absent; but if it started in the lips of the valve colic is an early symptom. Indicanuria is always met with.

Cecal carcinoma must be differentiated from impacted feces, floating kidney, tumor of the kidney, distended gall bladder, ovarian cyst, acute and chronic appendicitis, intussusception, sarcoma and tuberculosis of the cecum. Most of these conditions can easily be differentiated. Intussusception occurs in the young, is acute, blood and mucus occur in the stools, tenesmus is present and a cyclindrical mass is palpable; acute appendicitis has an acute onset with fever and abdominal rigidity, but without stenosis or tumor unless a local abscess has made its appearance; sarcoma is characterized by rapid growth and absence or late occurrence of stenosis.

The differentiation between tuberculosis and carcinoma of the cecum is often connected with many difficulties. Tuberculosis occurs as a rule before the fortieth year of life, is more chronic, the lungs are usually involved except in the hyperplastic type, the tumor extends in the length of the bowel, the surrounding bowel is infiltrated except in the hyperplastic type, the surface of the tumor is less bossed, fixation occurs earlier, manifestations of stenosis are more marked, blood and pus in the feces are rare, tubercle bacilli are frequently demonstrable; fever is usually present, and the diazo-reaction is positive.

A STUDY OF BLOOD STAINS WITH ESPECIAL REFERENCE TO LEGAL MEDICINE

By JUSTIN HEROLD

Professor of Medical Jurisprudence and Toxicology, Fordham University Medical School

New York

I

The importance of blood stains as a means of determining the guilt of a suspected criminal is daily becoming a subject of deeper interest to those engaged in medico-legal investigation; the following pages may serve to throw some light on the matter in a concise form, and enable us in determining whether the stains are of human blood, or of that of the lower animals, and also what is their character, so that we may estimate, more or less accurately, the nature of the crime. Many stains simulate blood stains, and then, again, a true blood stain may appear to be something else. Hence the absolute importance of accurate tests whereby they may be distinguished. The presence of hemoglobin, the coloring matter of the red blood cells, will indicate that it is a blood stain and, together with the form of the red blood cells, will determine for us that the blood is that of a mammal; while the blood serum will determine whether it is the blood of a human being, or of some other animal.

For medico-legal purposes the latter is what concerns us chiefly, and we will therefore deal mainly with the tests necessary for our purpose. In making any of these tests we must not forget what a responsibility we assume in aiding to determine what may be a sentence of death, or of life imprisonment, for a human being, and consequently with what absolute care and accuracy we should set about our task.

The first thing to be done, should there be any doubt in the matter, is to ascertain beyond a doubt that the stains are blood stains, and this can be readily demonstrated either by microscopical examination, the guaiacum test, the spectroscopic test, the hemin test (Teichmann's test), or other minor tests.

The next thing is to determine the origin of the blood stain, whether it is human or animal blood. For many years the microscope was employed to determine this, measurements being taken of the red blood cells, which vary in diameter in man and the lower animals; but micrometry alone is not a reliable method, especially in the case of old, dried blood stains where the cells may be bruised and have lost their original proportions. The serum tests were tried,

the agglutinin, the hemolysin, and the precipitin tests. The agglutinin test, however, is unreliable, as the action of the agglutinins is variable, and the hemolysin test is not easy to carry out, and therefore less practical for medico-legal purposes than the precipitin test, which was evolved from these serum tests by Uhlenhuth, Wassermann, and Schütze, who, from their experiments in precipitin reaction foresaw the value of this method in determining the origin of a blood stain in criminal cases, and it is now accepted in the forensic practice of most civilized countries as a valuable aid in the investigation of evidence.

The method was first tested by Uhlenhuth with a precipitating antiserum on the putrefied bloods of man, horse, ox, sheep, dog, cat, goose, fowl, hare, rabbit and stag, among all of which the human blood alone showed turbidity, the others remaining clear.

The precipitating action of various antisera had already been demonstrated by Kraus and Bordet, who immunized rabbits and used the serum they thus obtained in making their tests. The addition of this serum to the homologous material to be tested produced reaction and the formation of a precipitate or deposit. Their observations were confirmed by those of Uhlenhuth, Myers, and others, among them Wassermann and Schütze, who added their testimony to the fact that many animals will develop a serum some of the constituents of which will cause reaction with a precipitate in non-related bloods. In order to test the degree of specificity of precipitins Nuttall made 16,000 tests with 900 specimens of blood from 586 or more different species, and this specificity being established, both through his experiments and those of others, it became a question whether they could discriminate between the various forms of albumin, the precipitate being albuminous. It was found by Graham Smith and Sanger that anti-human sera caused the formation of a precipitate in old or fresh human sera, placental sera, pleuritic exudation, hydrocele fluid, ovarian cyst fluid and amniotic fluid, giving evidence of a general albumin reaction.

Other experimenters, among them Schütze, Biondi and Dieudonné, obtained reactions with antisera only in homologous bloods.

Uhlenhuth, as we said before, made his first tests with specific precipitating anti-sera on various specimens of putrefied blood, the human blood in some cases having been as much as three months in process of putrefaction. He next tested the urine of a menstruous woman, also urine mixed with blood from an ox, pig, sheep, horse, cat and fowl. The menstrual urine alone showed reaction, some blood having been present in it. He next tested water in which alkaline soap had been used to wash off blood, and the traces of human blood alone gave reaction.

In the examination of blood stains for medico-legal purposes a

variety of essential preliminaries must be observed, one of the most important of which is, that all articles of clothing, not alone those worn by the victim or the suspect in a murder case, but anything on the premises that may have on it a stain caused by blood, even if the blood should have undergone certain changes, should be minutely examined in bright daylight, and also by candle or lamplight, as the latter often reveals blood stains that pass undetected in daylight. Insignificant stains, the result of crushing an insect, a pin scratch, a cut while shaving, or some other trifling cause may frequently be found on the neckband or shirt collar. In larger and more important stains the situation of the stain, or stains, should be specially noted, and if there be a cut or rent in the clothing its position should be compared with the position of the wound in the victim.

Location and shape of blood stains. Blood on the hand of the suspected murderer would seem to be a fair evidence of guilt, and yet, in a case of suicide there is apt to be blood on the hand that held the weapon, should it be a sharp instrument; but, on the other hand, the victim of murder might instinctively raise his hand to the part attacked and some of the blood might spurt on his hand. The murderer is likely to wash off any evidences of his guilt on his own person, and the absence of a blood stain would not, of itself, establish his innocence.

If the victim dies immediately from his wound, or wounds, the blood will naturally be beside, or around him; but should an artery be severed the blood will spurt sometimes as far as six or seven feet from the spot.

Again, the direct cause of death may appear to be a fall, and yet murder may have been committed previous to the fall, and the victim may have fallen or been thrown downstairs, or from a height, to avert suspicion, as in a case reported by Taylor (Med. Jurisp. 1883, vol. I, p. 522), in which blood stains on the walls, taken in conjunction with a wound on the scalp, showed that the temporal artery had been incised.

There may be tracks of blood as from dragging a bleeding body, which, of themselves, are a strong indication that murder was committed, but these differ from the tracks of arterial blood left if the victim has strength to move away after being wounded. The victim may grasp the hand of his murderer leaving a bloody imprint. Bloody footprints may not always be the tracks of a criminal, but sometimes of persons who have come on the scene later, before the blood has time to dry. However, all footprints, all finger marks should be observed and noted.

If the blood stain is round and compact on a hard, smooth surface, as a marble or hardwood floor, or other non-absorbent material, it has fallen perpendicularly from a short distance; if it fall

from a greater distance—three or four feet, or more—it will still be round, but flatter, with less even edge, and possibly a few tiny blood specks scattered around it.

When the blood spurts out obliquely on a hard, smooth surface, it makes an oval, or pear-shaped stain, the larger oval being nearer the source, while the thinner end extends sometimes an inch, or more, in a little streak, or small oval dashes of blood; the greater the velocity of the flow, the longer these stem projections. If the surface on which it spurts should be hard, smooth, and perpendicular, as wood, glass, etc., it flows down till it coagulates, leaving a wide, thin streak which ends in a thick lower edge. By closely observing all these particulars we may often be aided in estimating the position of the assailant, and the manner in which the wound was inflicted. In this respect, as in the whole examination, the method of Zadig should be closely followed, i.e., each and every slight, and apparently insignificant clue noted, even to blood in the seams of garments, cracks of weapons, or welts of shoes where the blood may have been imperfectly washed away.

Color of blood stains. Fresh blood may vary in hue according to its source, and somewhat according to a person's physical condition, but as soon as it coagulates it turns darker, and continues through the effect of time and air to become ever darker, until it is almost black, which makes the determination of the age of a stain very difficult. As Hammerl points out, the solubility of the albumens and the pigment is the safest guide.

Various experimenters have arrived at different conclusions regarding the solubility of old and altered blood stains, but Sutherland obtained hemin crystals from stains heated 2 to 3 hours at 140° C., though dried blood is not supposed to yield extracts at that degree of heat. Ziemke conducted a series of experiments with an anti-human serum on bloods that had been dried for years, and obtained a reaction. Ewing advocates identification of blood stains by their staining property. Uhlenhuth demonstrated that a blood stain of 66 years' standing could be identified as human blood by the biological method, while Zahn and Gantter tested blood with hydrogen peroxide, which caused a reaction as evidenced by the immense quantity of bubbles forming a white froth on contact of the peroxide with the blood, or blood-stained material, even though the blood be in a solution of 1 drop to 1500 c.c. of water, as reported by Palleske. The absence of this bubbling froth would be a good negative test, except when the stain is heated to above 120° C.

In estimating the time that has elapsed since the commission of a quite recent murder, the following facts may be of interest.

On a non-absorbent surface, such as marble, stone, or polished wood, blood dries more slowly than on a textile fabric. Draper ob-

served a drop of blood on a steel surface that took fifty minutes to dry at room temperature of 68° F. It began to contract at the edges after the first ten minutes. A thin smear on the same surface dried in four minutes, and a thicker one in nine minutes. On hardwood it took two hours for the full drying process. The rapidity of coagulation depends on the greater or lesser degree of fibrin in the blood, and may be retarded, or even prevented, by a diminution of this substance in the blood, as in dropsy from cardiac, renal, or liver diseases, or by carbonic acid gas poisoning. In cholera the blood becomes thick and tarry, in anemia, watery.

Wood pointed out the necessity of observing the exact condition of all the blood stains when found in order to determine whether they were all produced simultaneously.

Microscopical examination.—The microscope is very useful for the closer examination of very minute stains, especially if they are of doubtful origin, and on fabrics where the blood has soaked into the material; for blood imparts a peculiar starchy quality and a shiny appearance to the fiber which cannot always be distinguished with the naked eye.

The microscope is also used to ascertain, by the measurement of the average diameter of the red blood cells, whether the stain was human or animal blood, and this was formerly the only method of distinguishing between the blood of man and other mammals.

The average diameter of the human red blood cell is between $1/_{3300}$ and $1/_{3200}$ of an inch. But a few cells, even under normal conditions in adult life, whether of man or of the lower animals, do not conform to this average, but show a considerable range between the maximum and the minimum, as Draper points out. Disease, atmospheric conditions, time and exposure of the stain may one and all make some change in the size of these cells. Thus, although it might be possible in the case of fresh blood, which seldom comes under observation in criminal cases, and by a large number of measurements, to distinguish between the red blood cells of man and certain of the lower animals, it would be risking too much to assert positively that any given specimen was human blood, though the character of the blood might seem to indicate a human origin. Uhlenhuth himself succeeded in determining the origin of only three kinds of blood by this method: human, pig's and sheep's blood. But when it was a question of distinguishing between human and other bloods where the size of the red blood cells approximated more nearly that of human red blood cells he could not make a positive assertion.

In microscopic examination of fresh blood by some of the most prominent microscopists of the last century their measurements of human red blood cells varied from .00902 to .01504 of a millimeter,

which shows how unreliable the data would be should a human life be at stake. And if this is so with fresh blood, how much more difficult must be the diagnosis in the case of old, dried blood.

The presence of foreign objects in the blood, such as epithelial cells, fat cells, particles of bone, hair, mucus, fecal matter, vegetable cells or fibers of cotton, wool, or hemp, or even tiny particles of earth or wood, may be observed through a powerful lens or microscope, and their presence should be carefully noted.

Extraction of blood stain for micrometric examination. If of recent date, the blood stain may be extracted with almost any of the known solvents: Roussin's—A 3:1 solution of glycerin and sulphuric acid diluted with as much water as will make a specific gravity of 1.028; or Virchow's solution of potassium hydrate; or Paccini's solvent; or simply enough distilled water to restore the blood to its original form. Old dried stains should be cut out and soaked in a dilute solution of glycerin, to which may be added a small quantity of potassium ·hydrate, if necessary, to produce the solvent effect. Unless, however, the blood should have clotted on the surface of a fabric it would be useless to attempt measurements. If it has dried on a hard polished surface the blood can be scraped off with a sharp knife on to a glass slide, where it is fixed with a mixture of absolute alcohol and ether and after a drop of solvent is added is covered with a thin glass cover and sealed tight to prevent evaporation. As the mass softens the red blood cells may be observed in a more or less normal condition. Diphtheria, high fever, blood poisoning, have been shown to reduce the diameter of the erythrocytes by making them more or less spherical, while pernicious anemia increases it, as do alcohol and certain drugs.

Guaiacum test.—The blood stain, or a portion of it (a few fibers of the stained fabric may even suffice), is placed on an evaporating dish and the blood pigment dissolved as much as it can be in a few drops of water. On addition of a few drops of tincture of guaiacum the mixture should remain colorless. On now adding a few drops of hydrogen peroxide solution the stain will attain a bright blue color, should blood pigment be present. The test should react in a solution of 1.5000, according to Wormley. But as sulphates of iron and copper, chlorides of gold and sodium, manganese dioxide and permanganate of potash will also yield this blue color, as does also glue and casein, this cannot be considered a satisfactory test.

Van Deen's method. Small amounts of the suspected blood stain are pulverized and gathered on damp filter paper, and allowed to remain until they dissolve. A few drops of tincture of guaiacum are then poured on this blood extract, and if no change of color takes place ozonized oil of turpentine is added. If the color does not

change to blue within a minute's time, the test is negative for blood.

Hemin or Teichmann's test.—This test is to-day considered a sufficient and conclusive method of determining the presence of blood in a stain by demonstrating the presence of crystals, usually rhombic, of a halogen salt of hematin in the specimen under observation. It is especially valuable, inasmuch as a minute quantity of blood can be tested, as little as $^1/_{100}$ of a grain, according to Wormley.

Method of performing test. After placing a minute quantity of the dried blood or stain to be examined on a glass slide, a very small grain of NaCl, dissolved in water, is added to it. A cover glass is placed over it and it is allowed to evaporate by gentle heat. A drop of glacial acetic acid is then allowed to pass under the cover glass and the slide is slowly heated until bubbles indicate that the acetic acid is just at the boiling point. After cooling hemin crystals will form; they can be clearly seen through the microscope. They may be free or in groups, and are of a yellowish, or dark brown color. They may be preserved indefinitely, and used, if necessary, as evidence.

The brown color, together with the shape of the crystals, is important. According to Vibert, almost identical crystals may be obtained from the washings of flannel blued with indigo, but there is little likelihood of a mistake if one is prepared for this fact before testing cloth containing bluing. All the halogen salts of hematin—chlorin, bromin, iodin, fluorin—produce these typical crystals, varying usually from $^1/_{6000}$ to $^1/_{1200}$ of an inch. They are slightly soluble in ammonia, dilute sulphuric acid, and nitric acid, dissolve readily in caustic potash, and strong sulphuric acid, but are insoluble in water, ether, and alcohol.

In making the test, care should be taken to avoid heating above 140° C. If the stain has been exposed for some time to the action of direct sunlight, or great heat, the blood pigment decomposes and inhibits hemin reaction.

Richter uses a hollow glass slide for this test, to prevent the acid from evaporating too rapidly, allowing the specimen to stand all night in order that the hematin may dissolve gradually. In the case of old, dried or partly washed out stains this might be efficacious. Richter is of the opinion that failure of the hemin test is generally due to the formation of comparatively insoluble hematin and not to further decomposition products of hemoglobin.

Sodium tungstate method. Wood recommended concentration of the stain by a saturated solution of sodium tungstate in water, rendered strongly acid with acetic acid. The washed stain on the fabric is soaked in water, to which are added 1 or 2 drops of sodium

or potassium hydrate. The solution is filtered and acidified with acetic acid; after this is added a little sodium tungstate, which will produce a precipitate should any blood be present. The mixture is then brought to boiling, which causes the precipitate to clump and to attain a chocolate-brown color. The precipitate is then collected on a filter, washed, a portion of it placed on a slide, and the hemin test performed. If any blood pigment be present, hematin crystals will form.

Spectroscopic test.—The ordinary spectroscopic method is too well known to need explanation; however, it is only useful to determine the presence of blood in a stain. A new method of performing this test in the case of minute blood stains (when these had been partly obliterated by washing with soap or strong alkalies, thus more or less removing the blood pigment or altering its quality) was reported by O. Leers in September 1908, at a session of the Gesellschaft deutscher Naturforscher und Aertzte at Cologne. It is performed as follows: The stained fabric is macerated in a test tube with a concentrated alcoholic solution of KOH; 5 to 6 drops of pyridin and 1 to 2 drops of ammonium sulphate are then added. On shaking this, an emulsion is formed, in which the pyridin previously saturated with blood pigment rises in the tube, leaving a precipitate showing the blood pigment thus separated, free from any admixture, in the hemochromogenspectrum. The pyridin may in certain instances be drawn off by means of a pipette, and still further separated on a heated slide for microspectroscopic evidence of still more minute traces of blood. This is especially adapted for stains in which the blood pigment is admixed with other coloring matter.

Progress of Diagnosis and Prognosis

GENERAL METHODS OF EXAMINATION—SYSTEMIC AFFECTIONS—DISORDERS OF GENERAL METABOLISM—INFECTIOUS DISEASES

Pressor Bases of the Urine—W. BAIN, Lancet, April 30, 1910.

The pressor bases which are present in the urine of normal adults can be readily obtained by shaking the urine with Fleming's blood-charcoal, and subsequently extracting the charcoal with suitable reagents. The urine of children contains these bases in minimal amount. In all cases of high blood pressure hitherto examined, the urine contains very little of the bases in question, and in some cases they are altogether absent. The non-elimination of the bases probably indicates that they are retained in the body and play an important part in the production of high blood pressure.   SACHS.

Arnold's Reaction—E. HERZFELD and H. BUSS, Med. Klinik, 1910, No. 20.

Arnold's reaction consists of the production in the urine of a violet coloration when sodium nitro-prussiate has been added, which color changes to purple-red and yellow. While Arnold has observed this change in color only after the ingestion of meat it will also ensue after eating of baked cheese, butter, etc. However, after ingestion of boiled or roasted meat the reaction is so·intense that it may be designated as a typical meat reaction. In pathological conditions the reaction was positive in typhoid fever, scarlet, measles, hemorrhagic nephritis, etc.   MILL.

A new Reaction for Glycuronic Acid—G. GOLDSCHMIDT, Zeitschr. f. physiologische Chemie, Vol. LXV., p. 389.

To ½ to 1 c.c. urine is added a solution of alpha naphthol (2 drops of 15% sol.). This is permitted to gently flow upon 3 or 4 c.c. concentrated sulphuric acid. At the line of contact of both liquids appears a violet ring which, on standing, extends in width on the side of the urine while the sulphuric acid assumes greenish coloration. The reaction is very sensitive and may be utilized to detect fractions of a milligram of glycuronic acid.   WESTERN.

Simple Procedure for the Determination of Sugar in the Blood—K. MOECKEL and E. FRANK, Zeitschr. f. physiologische Chemie, Vol. LXV, p. 323.

From 12 to 15 c.c. blood are, under constant stirring, allowed to flow into a small porcelain dish in which is contained some sodium fluoride. The plasma is then separated from the red blood cells by centrifugation.. Five c.c. of the plasma are then placed into a gradu-

ate of 100 c.c. capacity; to this is added sufficient distilled water to make 50 c.c. After this 10 c.c. liquor ferri oxydat. dialysat. together with a drop of concentrated acetic acid and 0.2 gram magnesium sulphate (in place of the latter two or three crystals of Rochelle salts of pea size may be used) are added. After thorough shaking enough distilled water is added to make 100 c.c. of the mixture. Of this 50 c.c. are filtered; in the albumin-free filtrate the sugar is determined according to Bertrand. WESTERN.

Turpentine and Nylander's Test—KAMBERG, Tijdschrift voor Geneeskunde, 1910, I. No. 14.

Author was examined for life insurance. The examining physician found that the urine reacted positively to Nylander's test. The copper tests were negative. The urine had the odor of violets, and author remembered that turpentine had been employed in abundant amounts in the cleaning of his home, and that he had inhaled it during the entire day. This explained the positive Nylander's reaction. WEBB.

A Simple Method for the Differentiation of Iodine, Indican and Skatol in Jaffe's Indican Reaction—B. SPIETHOFF, Münchener med. Wochenschr., May 17, 1910.

If the urine contains iodine the filter paper will turn blue all over when the urine to which has been added some chloroform is being filtered, while the red chloroform will remain at the bottom of the funnel. The blue color of the filter paper fades gradually. The color sediment will also disappear, but it will last in the presence of skatol or indican. MILL.

A Case of Indiguria—TRAUMANN, Deutsche med. Wochenschr., April 28, 1910.

A girl, thirteen years old, voided for a protracted period urine of a grass-green color. Brought in contact with air the color of the urine changed to blue. Investigation disclosed that the discoloration was due to indigo-blue. There were no other manifestations of disease. After some weeks the phenomenon disappeared. The cause of this rare condition was not disclosed. MILL.

Non-Parasitic Chyluria—J. HUATEK, Deutsche med. Wochenschr., April 28, 1910.

Chyluria is mostly called forth by the presence of parasites, especially of Filaria sanguinis hominis, in the blood or lymph. There are, however, cases in which there exists no parasitism. In such instances, it appears that there is an over-supply of chyle components in the blood which the latter cannot do away with. There are no gross renal lesions in these cases. The prognosis is not unfavorable. A woman, thirty-three years old, suddenly voided milky urine. The

urine exhibited 7.73 per mille albumin. Chyluria existed only at night; during the day the urine was not altered at all. When in the recumbent posture the urine contained also during the day 123 times the amount of fat which was excreted by the urine voided when walking. The left kidney eliminated four times as much fat as the right one. This is a symptom rather pointing to the cause as being situated in the neighborhood of the kidneys than to a disturbed renal activity per se.　　　　　　　　　　　　　　　　　　　　MILL.

Significance of the various Enlargements of the Thyroid Gland with special Reference to Basedow's Disease—C. BECK, N. Y. Med. Jour., May 7, 1910.

While it is true that the most conspicuous sign of morbus Basedowi is the thyroid enlargement, the significance of this superficial resemblance is entirely different from that of simple goitre. The insufficient distinction between both conditions is responsible for the widespread tendency to treat both conditions alike. Simple goitre (struma) is characterized by the abnormal increase of normal thyroid tissue, while in exophthalmic goitre the production of the special toxine by the enlarged thyroid gland is the essential factor. The hypertrophy of the tissues in simple goitre is either nodular or diffuse. One form may merge into the other. The types are parenchymatous (follicular) colloid, fibrous or vascular. The disturbances caused by simple goitre are of a mechanical character. A large goitre may produce pressure on the recurrens or cause lateral curvature of larynx or trachea, followed by symptoms of suffocation. The textbooks speak of the distinctive diagnosis of the various types of common goitre as an easy affair. While this is often true, there are many cases which offer diagnostic difficulties. Author has repeatedly observed cases, in which fluctuation was not only absent, but in which palpation of the goitre yielded the impression of marked solidity, the hardness of the tissues being like that of a board. And still, the tumor consisted of hemorrhagic fluid. In such indefinite cases the Röntgen rays may be resorted to, since they show the liquid accumulation as a large translucent very light shadow, while the solid forms appear dark. Calcareous concretions give the clearest skiagraphs. Cervical cysts (blood or lymph cysts) and especially the hygroma, which originates in the bursa synovialis, separating the thyrohyoid muscle from the thyrohyoid membrane, seldom becomes larger than a walnut. Thyroid tumors ascend and descend synchronously with the act of deglutition, while cysts of the neck remain in situ. Differential diagnosis between goitre and malignant neoplasm is difficult at an early stage, that is when thorough extirpation has a promising chance. It is significant that carcinoma as well as sarcoma of the thyroid predominate in regions where goitre is endemic.　　　　　　　　　　　　　　　　　　WESTERN.

Thymus Function—M. LUCIEN and S. PARISOT, Archives de médicine expérim., Vol. XXII, Jan., 1910.

Rabbits with extirpated thymus showed general retardation of growth. The bones of these animals were smaller and lighter than those of normal rabbits, but exhibited no deformities. A specific influence upon the glandular organs could not be demonstrated, but the male as well as the female sexual glands were smaller in thymectomized animals. This, however, does not point to a specific connection between thymus and sexual glands, but is the result of the general retardation of development. These changes are marked only when the thymus was removed in very young animals. ZIMMER.

Experimental Studies concerning the Importance of the Thymus for the animal Organism—C. HART and O. NORDMANN, Berliner klin. Wochenschr., May 2, 1910.

Authors did not obtain many positive results. Suppositions and conjectures predominate the entire question, and the study of the overabundant but contradictory literature increases the uncertainty as regards the status of the thymus gland in the animal economy. The definite results of the authors are: the thymus is an important, and probably even an absolutely essential organ during the period of growth of an organism. It stands in connection with assimilation and the regulation of the activity of the cardiac arteries, and it is probably of import for the resistance of the organism to bacterial influences. An excess of thymus or its metabolic products gives rise to symptoms of intoxication, which readily disappear when the excess ceases. MILL.

Case of Bilateral Adrenal Cysts—DE VECCHI, Virchow's Archiv, Vol. CC, p. 151.

In a woman, thirty-three years old, who had died of pulmonary phthisis, there was found a small cyst on the right and a larger one on the left adrenal gland. The case was probably one of so-called spurious cysts with secondary hemorrhage. MILL.

Albumin Metabolism in Children—P. GROSSER, Biochem. Zeitschr., Vol. XXIV, p. 346.

Two extended metabolic experiments with a nursling and a child four years old to determine whether by an abundant ingestion of water for one or more days the excretion of nitrogen could be increased. It was demonstrated that the nitrogen metabolism in children cannot be influenced by water. WESTERN.

Orthotic Albuminuria—F. GÖTZKY, Jahrbuch f. Kinderheilkunde, Vol. LXXI, 1910, p. 427.

Only such albuminurias may be designated as orthotic in which anatomical elements of renal origin have never been demonstrated.

Again, there are cases of chronic infantile nephritis, i.e., orthotic children who have acquired nephritis, exhibiting orthotic characteristics. Orthotic albuminuria is not a definite clinical picture. There exists no connection between orthotic albuminuria and tuberculosis. Orthotics have a pronounced dermographia which frequently becomes more marked during the presence of albuminuria than in the albumin-free period. The intensity of the albuminuria varies greatly in different individuals. Oxaluria is of no pathognomonic significance in orthotic albuminuria. The acetic acid substance is the most frequently excreted albumin body in nearly all orthotic individuals. The direct transformation of orthotic albuminuria into sclerotic kidney has not been demonstrated. The prognosis is generally good, but the children affected with orthotic albuminuria should be protected from untoward influences and exertions. The albuminuria should not be treated.   MILL.

Banti's Disease—H. CHIARI, Strassburger med. Zeitung, March, 1910.

History of a case. Author recognizes the affection as a disease entity. Anemia due to the splenic tumor and hepatic cirrhosis are characteristic of the disease. Contrary to Banti, author opines that the fibrosis of the spleen in this affection is due to fibroblasts, as is the fibrosis of this organ in other maladies.   FRY.

Symptomatology of Infantile Scurvy—J. P. C. GRIFFITH, N. Y. Med. Jour., June 25, 1910.

Pain is the most marked symptom in infantile scurvy. Its onset is sudden in many cases, and an injury may be suspected. In the majority of instances, however, the pain comes on gradually. It is intermittent in the beginning, finally it becomes continuous. It is very great on passive movement; in nearly every instance the pain occurs in the lower extremities, either alone or in other regions as well. *Pseudoparalysis* is a natural consequence of the pain on movement. It varies in degree from slight interference with voluntary motion up to absolute inertness. The legs then lie as though paralyzed and may readily be supposed to show the result of anterior poliomyelitis. Involvement of the gums is present in the majority of cases. It consists in swelling, sponginess, and a more or less deep, bluish purple color, especially over the incisor teeth in the upper jaw. The swelling may be sufficient to bury the teeth from sight. Bleeding may take place and ulceration is not uncommon. The affection of the gums is sometimes the first detectable symptom. *Swelling of the limbs* is a very characteristic symptom of pronounced scurvy. It is located in the shaft of the long bones, but sometimes so close to a joint that superficial examination leads to the conclusion that the latter is involved. The skin may be discolored or natural in appearance. *Hemorrhage,* such as occurs beneath the periosteum and

in the gums, is seen also in other parts of the body and is one of the most characteristic symptoms of the disease. One of the most frequent forms of hemorrhage is from the kidney. The *general condition* of the infant is more or less affected. In mild cases there is little alteration of general health. In severe or long continued cases progressive anemia and cachexia develop. The expression is one of constant pain. Edema of the parts involved is often marked, sometimes with a marantic edema of other regions. There may be moderate fever; appetite is diminished; diarrhea is not uncommon, or there may be constipation.   WESTERN.

Prognosis and Differential Diagnosis of Infantile Scurvy—T. LE BOU-
TILLIER, N. Y. Med. Jour., June 25, 1910.

Deaths do occur in infantile scurvy, but the disease offers a favorable prognosis, as a rule. In the ordinary case which is not complicated by an intercurrent disease, and in which prompt antiscorbutic measures have been taken, there will be very few fatalities. If, however, the case has been seen late, and no diagnosis or an incorrect diagnosis has been made, and no antiscorbutic treatment applied, one is liable to find all the symptoms in such an advanced chronic stage, combined with malnutrition, that the weakened infant cannot recover. In such cases death may be due to sudden hemorrhage, cardiac failure, or exhaustion. The most important disease in differential diagnosis, and the one which is most frequently mistaken for scurvy, is rheumatism. About four-fifths of all cases of scurvy have at some time or another been diagnosed as rheumatism. Rheumatism, however, is very rarely seen under two years of age; scurvy occurs during the first two years of life. The pain and tenderness of scurvy are more frequently manifested in the legs than elsewhere, while that of rheumatism may be encountered anywhere. Acute poliomyelitis is at times mistaken for scurvy. Here it must be remembered that the onset of anterior poliomyelitis is sudden, that there is little or no pain with the exception of the first thirty-six to forty-eight hours, and that there is no tenderness on pressure, while in scurvy there occurs the exact opposite. Periostitis, osteitis, osteomyelitis, and osteosarcoma are at times diagnosed in cases of scurvy, due to the fact that we find occasional unilateral swelling of the long bones. Here the diagnosis must be made from the location and shape of the swelling, discoloration, and pain, also the pyrexia, which is not seen in scurvy, but may be seen in these diseases. At times the condition of the gums simulates ulcerative stomatitis, but lesions will not be found on the lips and cheeks in scurvy. Hematuria of scurvy has been at times mistaken for renal discharge from other causes, such as sarcoma of the kidney. In such cases the other symptoms of the affection must aid in making the diagnosis.

                                                      WESTERN.

Pathogeny of Ankylostomiasis—P. D. SICCARDI, Archives de Parasitologie, Vol. XIII, No. 4, 1910.

The production of the grave anemia consequential to the presence of ankylostoma in the duodenum, cannot be solely explained by the sucking of blood by the parasites. A series of observations on patients point with great certainty to the occurrence of a specific poison which plays an important part in the production of the anemia. A number of typical manifestations can only be explained on the hand of a certain toxic action; again, the pathological manifestations do not readily disappear after the parasites have been removed from the body. The poison, which has as yet not been identified, occurs in the blood of the patient. ZIMMER.

Serodiagnosis of Malignant Tumors by Means of the Meiostagmin Reaction—M. ASCOLI and G. IZAR, Münchener med. Wochenschr., May 31, 1910.

Malignant growths contain specific substances which belong to the lipoids and which are not demonstrable, i.e., are, if at all, contained in traces only, in a number of organs. The tumor sera react differently with these specific lipoids than normal sera. The antigens of discrepant neoplasms, as carcinoma and sarcoma, in man as well as in the rat or mouse, exhibit marked similarity. MILL.

Staining of Spirochæta Pallida in Vivo according to Meirowsky—L. ZWEIG, Med. Klinik, 1910, No. 21.

Into the (by means of a sodium chloride solution well cleaned) lesions—ulcera dura, papula, condylomata lata—a freshly prepared methyl-violet mass (a few granules of methyl-violet are well mixed with a few drops of water to form a mushy mass) are pressed with a glass rod. After two or three minutes some serum is removed with Bier's sucking instrument. A drop of this serum is mixed with a drop of water on the slide and then examined under the oil immersion. The red blood corpuscles show dark-blue integument; leucocytes, epithelia and bacteria are colored deep-violet. The spirochæta pallida is stained distinctly light-blue, and its rotating movement is readily discernible. MILL.

New and Quick Method for Staining Spirochetes (Treponemata) in Smear Preparations—A. A. W. GHOREYEB, Jour. A. M. A., May 7, 1910.

In this method the following solutions are used: (1) one per cent. watery solution of osmic acid; (2) liquor plumbi subacetatis, diluted 100 times with distilled water. This diluted solution should be freshly prepared; (3) ten per cent. watery solution of sodium sulphid. A thin smear is preferable. No heat fixation is necessary. The smear is stained as follows: (a) cover with osmic acid solution for thirty seconds; (b) wash in water; (c) cover with lead subace-

tate ten seconds; (d) wash in water; (e) cover with sodium sulphid ten seconds; (f) wash in water. This process is gone through with three times. Following this the osmic acid solution is applied for thirty seconds and the specimen is then washed in water, dried and mounted in balsam. A thorough washing in running water is essential after the application of each solution to prevent the formation of excessive precipitates. The spirochetes, bacteria and cellular detritus are stained black.   WESTERN.

Demonstration of Treponema Pallidum by the India-Ink Method—F. B. Gurd, Jour. A. M. A., May 28, 1910.

The fluid to be examined, which is obtained in the usual way, is placed on a slide and an equal quantity of ink added. Ordinary commercial India inks may be used. Serum and ink are then rapidly and thoroughly mixed and smeared over the slide so that a pale-brown color results. The preparation dries in about one minute and is immediately ready for examination on placing the oil for immersion directly on the ink smear. The picture produced will show the red blood cells as large clear circular areas in a brownish-black field, the bacteria and débris present appearing as white rods and dots and spirochetes, if present, as clear white spirals. It is important when using this method that in so far as possible serum alone be used and that a minimal amount of mucous material or fibrin be mixed with the ink. The presence of mucus results in its taking up a large amount of the color material of the ink, with the result that a smear of the requisite color and thickness cannot be made. If too much serum is used the albuminous material appears to precipitate the stain from the fluid and a finely granular appearance is seen microscopically, which is practically worthless for diagnostic purposes. If too much ink is used the surface of the smear is increased in size to such an extent that it makes the examination more laborious.

                                                          WESTERN.

Wassermann and Noguchi Complement-Fixation Tests in Leprosy— H. Fox, N. Y. State Jour. of Med., May, 1910.

A positive Wassermann reaction is frequently obtained in cases of leprosy giving no history or symptoms whatever of syphilis. The reaction is at times very strong, inhibition of hemolysis being complete. The reaction occurs chiefly in tubercular and mixed forms of the disease, especially in the advanced and active cases. In cases of the maculo-anesthetic and purely trophic type the reaction is generally negative. The value of the test is not affected in the slightest by the results found in leprosy.   WESTERN.

Wassermann Reaction in Psoriasis Vulgaris—G. Georgjevic and P. Lavnik, Wiener klin. Wochenschr., April 28, 1910.

Every case of psoriasis vulgaris has a stage in which the Was-

sermann reaction is positive. In psoriasis vulgaris the positive reaction does not indicate the presence of syphilis.   MILL.

Demonstration of Tubercle Bacilli in the Sputum by Means of the Antiformin Method—H. GÖRRES, Zeitschr. f. klin. Medizin, Vol. LXX, Nos. 1 and 2.

According to its consistency, the sputum is diluted with not more than its own volume of water. Following this antiformin is added until a twenty-five per cent. sputum-water-antiformin mixture is obtained. This is well shaken until the entire mixture is foaming. After the foam has disappeared a slight yellow coloration must remain; if a brownish hue is still perceptible some more antiformin has to be added. The mixture is then allowed to settle. After from four to six hours the floccules are caused to descend to the sediment by careful turning of the container. When the fluid is free from floccules it is decanted. The sediment is taken up with a platinum wire and smeared with some sputum (the latter to make the sediment more adherent) on a slide. The entire sputum amount of a day may thus often be prepared for examination on one slide. The procedure is inexpensive, simple and is executed with but very little apparatus and in a short space of time.   WESTERN.

New Staining of Tubercle Bacilli according to Gram—W. BEYER, Med. Klinik, 1910, No. 22.

The new staining method of Gram-Much often discloses the presence of tubercle bacilli when the old Ziehl stain has given negative results. Every suspicious preparation of sputum, which shows no bacilli when treated by the old method, should be dissolved in antiformin and then stained according to Gram.   MILL.

Detection of Albumin in the Sputum of the Tuberculous—E. ROULET, Rev. méd. de la Suisse Romande, 1910, No. 4.

The existence of tuberculosis must be excluded when albumin cannot be demonstrated in the sputum. A positive albumin reaction occurs not only in tuberculosis, but also in the acute pulmonary affections. It has therefore but a confirmatory value in the diagnosis of tuberculosis.   ZIMMER.

A Preliminary Stage in Ehrlich's Diazo Reaction in the Urine of the Tuberculous—M. WEISZ, Med. Klinik, 1910, No. 22.

There are urines which do not yield, when freshly voided, the diazo reaction, but which react positively on having been standing for some time. This inconstancy of the diazo reaction in advanced pulmonary tuberculosis is due in part to the occurrence of a preliminary stage. The organism of a patient affected with advanced tuberculosis is no longer able to produce the principle of the diazo reaction

as such, but he excretes it in the form of a preliminary substance. The latter is converted into the principle giving the typical Ehrlich reaction when kept in the incubator and occasionally even when standing in the cold.   The diazo reaction can therefore only be considered negative when it does not occur after the urine has been in the incubator for twenty-four hours.   MILL.

Distinctive Cutaneous Reaction in Tuberculous Diseases—H. CLARKE and
   C. E. P. FORSYTH, British Med. Jour., June 4, 1910.

Authors using Detre's modification of v. Pirquet's cutaneous reaction in tuberculosis, report 250 consecutive cases.   By applying human and bovine tuberculin, it is possible, according to Detre, not only to determine the presence or absence of tuberculosis, but also to determine whether the bacillus present is of the human or bovine type.   They conclude that any patient giving no reaction is certainly not tuberculous, except in exceptional cases of advanced and moribund tuberculosis.   In pulmonary phthisis both reactions are usually present.   Detre's modification consists in the use of a 25 per cent. solution of old tuberculin made up with a diluent consisting of one part of 1 : 20 carbolic acid-glycerin and two parts of normal saline solution.   The solutions are kept in three pipette-stoppered bottles containing respectively, the diluent for control, human tuberculin and bovine tuberculin.   On the right forearm.is placed a drop of the diluent, and at some distance a drop of human tuberculin; the skin is scarified through each drop with a straight Hagedorn needle.   The solutions are then rubbed in with the needle. The left arm is similarly treated with bovine tuberculin.   A different needle, which is kept in alcohol, is used for each solution.   If a reaction occurs, a small red papule appears in twenty-four hours, increasing in size for three or four days and then gradually fades in about a week, leaving in some cases a slight desquamation or pigmentation.   In a few cases the papule becomes vesicular, and in still fewer the reaction is delayed until the fifth or sixth day.   The control should show no reaction on the third day.   SACHS.

Moro's Tuberculin Ointment in Surgical Tuberculosis—V. CHLUMSKY,
   Wiener klin. Rundschau, 1910, No. 14.

Author employed Moro's tuberculin ointment in about 150 cases. He is of the opinion that the test is not very reliable.   Of 24 cases of undisputed surgical tuberculosis but 14 reacted positively with Moro's ointment.   MILL.

Tuberculin in the Diagnosis of Surgical Tuberculosis—W. G. STERN,
   Cleveland Med. Jour., June, 1910.

The plan practiced by author for the past three years on over 250 cases, is as follows: If a case presents any clinical suspicion of

being tuberculous, the patient should be carefully questioned for a history of eye troubles and a thorough examination of the eyes made. Should these be found to be free from signs of disease, a conjunctival tuberculin test is made. If there be any doubt as to the condition of the eyes an ophthalmologist should be consulted as to the advisability of performing the test. At the same sitting a skin test is made and the patient is ordered back for examination in twenty-four hours. If neither test is positive he is again seen at the end of forty-eight hours. If both tests are now positive, author concludes that the patient is suffering from tuberculosis; if both tests are negative he concludes that the patient is free from tuberculosis. If one is positive and the other negative, he orders the patient to bed and when the latter is fever-free he gives him a single subcutaneous injection of tuberculin. If the patient reacts, author diagnoses tuberculosis, but if there is no reaction he rules out tuberculosis. Author's entire practice, and the deductions drawn therefrom, presupposes that the patient has at least some clinical signs whereby a suspicion of tuberculosis has been awakened. Author has always refused to pass any opinion upon positive reactions among those who present no clinical signs—among the apparently healthy—because, there is no way of ruling out, for instance, bronchial or mesenteric glandular tuberculosis, etc., and also because there must always be a certain percentage of error in this as in any other test. WESTERN.

Relation of Fibrosis to Tuberculosis—C. T. WILLIAMS, Lancet, June 4, 1910.

Pulmonary fibrosis in a tuberculous patient may obstruct the circulation, causing dropsy, and may nearly strangle the patient by reducing still further his already limited breathing space. SACHS.

Occurrence of Acetonuria in Cases of Infectious Diseases—A. HARRIS, Lancet, May 14, 1910.

In scarlet fever and diphtheria acetone is almost invariably present, even in the mild cases. The more severe the disease, the larger is the amount of acetone in the urine. In a mild case of diphtheria the acetone disappears from the urine on about the seventh day of the disease. The presence of acetonuria seems to possess some diagnostic value in differentiating between diphtheria and scarlet fever on the one hand, and an ordinary sore throat on the other. It is much more constantly present in the former cases. In adults, even in cases of diphtheria and scarlet fever, it is not present so constantly as in children. SACHS.

Absorption Fever and Early Recrudescence in Infectious Diseases—A. MENZER, Zeitschr. f. klin. Medizin, Vol. LXX, Nos. 1 and 2.

Histories of 11 cases of various infectious diseases in which a

brief second fever period was noted. The second temperature eleva-
tion was not due to recrudescence, as it lasted but a short time and
no extension of the infectious local process could be made out; the
real cause seemed to be the rather inordinate absorption of toxic
products which, instead of ensuing gradually, occurred occasionally
by single shoves. MILL.

Rheumatic Parotitis—COURTOIS-SUFFIT and BEAUFUMÉ, Gazette des
Hôpitaux, 1910, No. 28.

Rheumatic parotitis is a comparatively rare affection. Authors
had met with it as a complication of acute articular rheumatism in
three instances. It is mostly unilateral, and appears generally when
the articular manifestations and the general condition are improving.
The parotid gland is considerably swollen, but the integument is not
reddened. There is a slight temperature elevation. The affection is
of brief duration; the swelling disappears in from two to five days.
ZIMMER.

Infective Endocarditis—J. BERNSTEIN, West London Med. Jour., June,
1910.

As an aid to diagnosis, too much stress cannot be laid on blood
cultures. Positive findings confirm the diagnosis, but negative re-
sults are not absolute, as occasionally the organisms are only found
after repeated cultivations. In positive cases growth is sometimes so
slow that a diagnosis cannot be made for several days, but in others
twenty-four hours suffice. A blood count is not of much diagnostic
assistance. In the chronic cases there are no characteristic changes
of the leucocytes, though in the acute cases a leucocytosis may be
found. SACHS.

Influenzal Meningitis—F. E. BATTEN, Lancet, June 18, 1910.

It is impossible on clinical grounds alone to distinguish an in-
fluenzal meningitis from a meningococcal meningitis. It is only pos-
sible to arrive at the diagnosis of influenzal meningitis by a careful
bacteriological examination of the cerebrospinal fluid. Unless rou-
tine cultures are made on some blood medium, the organism may
be easily overlooked and the fluid reported to be sterile. SACHS.

RESPIRATORY AND CIRCULATORY ORGANS

Bronchial Asthma and its Relation to the so-called Exudative Diathesis
—A. v. STRÜMPELL, Med. Klinik, 1910, No. 23.

Asthma in its pure form is an expression of a specific constitu-
tional condition of a patient. This peculiar pathological constitution
demonstrates itself not infrequently in the appearance of analogous

conditions in other parts of the body:—on the nose in the form of acute swellings, on the skin in the form of urticaria, in the intestine in the form of colitis membranacea, in the joints as intermittent swellings, etc. These pathological conditions, which hitherto had been considered to be isolated affections, are intimately connected with each other on account of the presence of a general exudative diathesis in every instance. MILL.

Technic of Percussion of the Lungs—W. HILDEBRANDT, Münchener med. Wochenschr., May 10, 1910.

The lungs should not only be percussed when in the sitting posture, but also when lying down when the muscles are entirely relaxed. MILL.

Spinal Percussion in the Diagnosis of Tuberculosis of the Tracheo-Bronchial Glands in Childhood—M. MICHALOWICZ, Jahrbuch f. Kinderheilkunde, Vol. LXXI, No. 1, 1910.

The findings obtained by spinal percussion are almost analogous with the changes found at autopsy. Spinal dulness in tuberculosis of the tracheo-bronchial glands in childhood is mostly noticed between the first and fifth dorsal vertebra. The dulness over the first to the fourth dorsal vertebra corresponds to the tracheal chain of lymph glands, that over the fourth and fifth, in older children over the sixth vertebra, corresponds to the enlargement of the bifurcation gland. Moderate scoliosis and kyphosis have no bearing upon the value of spinal percussion. MILL.

Light Touch Palpation and Muscle Rigidity in the Recognition of Pulmonary Disease—A. WOLFF-EISNER, Deutsche med. Wochenschr., April 21, 1910.

The light touch palpation method is valuable in the recognition of pulmonary disease, especially in that of initial active tuberculous processes. It is related to the apex percussion of Krönig and may be utilized for the palpation of abdominal organs. MILL.

Respiratory Joint Crepitations—C. M. COOPER, Jour. A. M. A., June 4, 1910.

One hears occasionally confusing adventitious sounds over the scapular areas during auscultation of the organs of respiration. They may be of a creaking, crunching or bubbling character, and may occur during either or both phases of respiration. They are somewhat superficial and are confined to the scapular areas, or, if they extend outside, lose considerably in intensity at the bone margin. Displacement of the scapulæ forward causes them to disappear, and clear respiratory sounds are now audible when the stethoscope is placed over the same pulmonary area. In three well-marked cases author

was of late enabled to trace the origin of these sounds. In these cases they were produced in the apparently healthy shoulder-joint during its respiratory movement. From this position of maximum intensity they were propagated by the scapula to the suprascapular and infrascapular regions and by the humerus along the arm, over which they were heard with peculiar distinctness. In one instance they were propagated along the clavicle, but did not reach the sternum. In two of the three cases they had led the examiner to entertain suspicion that the patient had tuberculosis. Author states that no mention is made of these sounds in the student's text-books; that they sometimes lead to an erroneous diagnosis of tuberculosis of the lung area over which they are heard.   WESTERN.

An Auscultatory Phenomenon met in Infants and Children—H. LOWENBURG, Jour. A. M. A., May 21, 1910.

Normally in infants and children there exists a marked relative difference in the intensity and harshness of the inspiratory sound of the two sides of the chest, that on the left being louder and harsher. This difference is best noted posteriorly. The absence of this sign on the left usually means fluid in the left pleural sac. The diagnosis of fluid on the right is made more difficult by reason of this sign. The diagnosis of consolidation on the left is made more difficult. Unless this sign is taken into consideration the diagnosis of pneumonia on the left is apt to be made when other conditions are responsible for the fever. Consolidation should be suspected on the right when the sound on this side equals in harshness and intensity that which is normal for the left. Equalization of the sounds on the two sides, that on the left being weaker than normal, usually indicates fluid on the left.   WESTERN.

Fibrinous Pneumonia—H. v. WYSS, Zeitschr. f. klin. Medizin, Vol. LXX, Nos. 1 and 2.

Author's investigations were made on 41 men, of whom 5 died; 5 women, of whom 3 died; and 4 children, who all recovered. The leucocyte counts were quite at variance. In 10 cases the course of the leucocyte curve was typical: moderate hyperleucocytosis, on the day of the crisis rapid decline of leucocytes with a minimum after one or more days; after that normal or slightly increased leucocytosis. In a second series of cases, the decline did not occur with the crisis, but ensued one or two days later. In a third series of cases there existed instead of a hyperleucocytosis a leucopenia. In a fourth series there was at the onset a leucopenia which was transformed into a hyperleucocytosis later on. In a fifth series of cases a hyperleucocytosis existed in the beginning; this was followed by a decline to the normal or below. Viscosity was generally increased. Retention of chlorides is not an expression of a specific pathological mani-

festation, but stands in close relation to the hydrogen metabolism. The delirium in fibrinous pneumonia is either an intoxication, an alcoholic or collapse delirium.   WESTERN.

The Pupil Symptoms in Thoracic Aneurysm—W. OSLER, The Practitioner, April, 1910.

Variations from the normal in the size of the pupils in thoracic aneurysm are associated with three groups of cases. (1) The sympathetic nerve may be involved by the aneurysmal sac, and the pupil is contracted as the dilator influences are completely suppressed, and so allow the unopposed action of the sphincter controlled by the third nerve. Clinically, in the great majority of all cases of aneurysm, pupil features are present without other indications of the involvement of the sympathetic system. (2) It has long been known that with a low blood pressure the pupils are large, and on the other hand small pupils are often seen in association with the high arterial tension. In a large proportion of all cases of aneurysm of the thoracic aorta, the anisocoria which is present is due to the fall of pressure in the ocular vessels which results from compression of the carotid. (3) In this group the pupil features and the aneurysm itself are part and parcel of a syphilitic infection. The Argyll Robertson pupil or unequal pupils with absent knee-jerks, or lightening pains are associated with a condition in which aneurysm is present, in association with tabes.   SACHS.

Esophago-Cardiogram, its Explanation and Importance—W. JANOWSKY, Zeitschr. f. klin. Medizin, Vol. LXX, Nos. 3 and 4.

Fredericq was the first to show that a curve of the action of the left auricle may be obtained if a sound, to which a Marey capsule has been attached, is introduced by the esophageal route. Minkowski, Rautenberg, Joachim and Schreiber have subsequently approached this subject. Author has studied the esophago-cardiogram by means of Rautenberg's method, and has come to the conclusion that Minkowski's explanation of it is the proper one. He has obtained esophago-cardiograms in a series of pathological cases. They are only characteristic of stenosis of the left auricular opening, while the esophago-cardiograms of the other valvular affections are not pathognomonic.   WESTERN.

Auricular Fibrillation and its Relationship to Clinical Irregularity of the Heart—T. LEWIS, Heart, April, 1910.

Author concludes that amongst the many forms of persistent irregularity of the human heart, none is more common than that form which may be termed complete irregularity. It is characterized by an absence of all signs of normal auricular action, and it is due to fibrillation of the auricle. Auricular fibrillation as a pathological and

clinical entity exhibits certain definite signs. Amongst the distinguishing features, the following are the most important: (a) absolute irregularity of the ventricle, (b) the ventricular form of venous pulse, (c) a characteristic electrocardiogram in which the ventricular curve is of the usual height, but in which the normal auricular representative is replaced by a series of rapid oscillations, which are superimposed upon the rest of the curve and deform it. The oscillations are generated in the auricle and are the result of fibrillation. Digitalis retards the ventricular rate in clinical auricular fibrillation by enhancing a previously existing auriculo-ventricular heart-block. Auricular fibrillation in man may be accompanied by heart-block of all grades, and this may or may not result from digitalis administration. When the heart-block is complete the ventricular action is slow and regular. SACHS.

Independent Ventricular Rhythm; Heart Block and the Stokes'-Adams' Syndrome without Affection of Conductivity—A. M. GOSSAGE, Heart, April, 1910.

There is a constant building up of a stimulus in the ventricles, which stimulus is destroyed by each systole. Given an opportunity, this stimulus induces a rhythm in the ventricles at the rate of between 30 and 40 beats per minute. Under ordinary circumstances, this ventricular rhythm is concealed by the more rapid rhythm imposed on the ventricles by the sinus venosus, or what represents the sinus in higher animals. It is possible to get a condition resembling heart-block when the conductivity of the auriculo-ventricular bundle is intact. This may be due to deficiency of excitability in the ventricles. Heart-block is sometimes accompanied by an irregularity of the auricular rhythm. The influence of the respiratory movements must be remembered as a possible cause for the non-appearance of an expected auricular wave in the jugular curve. SACHS.

Cardiac Disturbances in Children and the Age of Puberty—C. HIRSCH, Therapie d. Gegenwart, May, 1910.

The occurrence of arrhythmia in childhood does not per se point to an organic disease of the heart. The so-called children's arrhythmia, according to the pulse tracing, is something entirely different from arrhythmia caused by extrasystoles. In nervous individuals there may even occur extrasystoles without the presence of a more serious affection of the heart. The proper valuation of cardiac sounds in children who had not been affected with endocarditis is of import. FRY.

Diagnosis of Mitral Stenosis—J. M. PATTON, Interstate Med. Jour., July, 1910.

Provided that the cardinal symptoms—presystolic murmur,

thrill, systolic shock, intensification of the second pulmonic sound and moderate lateral displacement of the apex beats—are present, the diagnosis of no valvular lesion is easier or more certain. But in the absence or indefinite presence of most or all of these indications there is no valvular lesion the definite recognition of which is more uncertain. There are certain general features associated with mitral stenosis which we are prone to neglect in our habit of going direct to the heart itself for diagnostic indications. Mitral facies is supposed to consist of a flush on the cheeks presenting every grade from slight duskiness to actual cyanosis, except in advanced stages of the disease or when acute dilatation of the left auricle has supervened when this condition is not usually present. Dyspnea, one of the distressing features of the advanced stages of mitral stenosis, is often a feature of diagnostic importance. Pain, generally considered to be an insignificant feature of mitral stenosis, is rather frequent, and, so far as its evanescent nature and recurrent character are concerned, is rather characteristic of the lesion. It is usually confined to the precordial region and may be quite sharp, though usually transient. Rarely the pain radiates to the shoulder or to the other side of the chest. The pain may be referred to the back between the shoulders. The striking peculiarity of the pulse is its tendency to irregularity, and to rapid variations between perfect regularity and an ataxic condition resembling that of interstitial myocarditis. The pulse has a peculiar jerky rap to the percussion stroke, which is not entirely lost, no matter how low the pressure may be. The area of cardiac dulness and the position of the apex impulse are most important in the diagnosis of mitral stenosis, and especially so in determining the presence of an uncomplicated stenosis. The transverse area of dulness may be increased from one-half inch on the right of the sternum to the left mammillary line, and yet the apex will present in the fifth interspace, or in children, even in the fourth interspace. Over the left auricle dulness on deep percussion may extend as high as the second rib if the auricle is much dilated. The important features on palpation are: the diffuse cardiac impulse, the systolic apical shock, impulse to the right of the sternum and about the epigastric notch, systolic impulse over base to left of sternum, and diastolic impulse over semilunar valve. Though the cardiac impulse may be feeble there is a sudden short rap of the immediate apex impulse, which, even though weak, is quite characteristic of mitral stenosis. WESTERN.

Morbus Ceruleus ("Blue Disease") in Four Generations—O. BURWINKEL, Berliner klin. Wochenschr., May 23, 1910.

The individual examined is fifty-four years old. His grandmother had already congenital cyanosis during her entire life, but was otherwise healthy and died from senility when seventy-six years

old; his mother had also "blue disease," but died in her forty-fourth year. His sister and her only child show an entirely blue skin. Two of his three children exhibit the same color of the skin; they are, excepting some digestive difficulty, in the best of health. He is a well developed man. His skin is steel-blue everywhere; it is somewhat darker at the tip of the nose and the ears. The cyanosis is even more pronounced in the oral mucosa, the lips and around the finger nails. The terminal phalanges are not thickened, and the peripheral veins are neither overfilled nor protruding. The pulse is normal in every respect. No symptoms of blood pressure increase or arteriosclerosis. Area of cardiac dulness is not increased, the apex beat is not palpable. In the fifth intercostal space below the left nipple there can be heard a systolic sound which is best audible in the left sternal border near the third rib. The other sounds are normal. The only complaint is a constant feeling of cold of the skin.

MILL.

ALIMENTARY TRACT

Differential Diagnosis between Hernia and Eventratio Diaphragmatica— BELTZ, Münchener med. Wochenschr., May 10, 1910.

The Röntgen examination may be often of value in the differential diagnosis between diaphragmatic hernia and eventration.

MILL.

Gastrotaxis—W. H. WHITE, British Med. Jour., June 4, 1910.

Some of the cases of pain, vomiting and hematemesis in young women are due to oozing of blood from the stomach, and may therefore be called gastrotaxis. No assignable cause of this condition is known. Several cases have been recorded lately of bleeding from the stomach in association with disease of the appendix. In toxemia associated with disease of the liver (apart from portal congestion) hematemesis may occur without any ulceration of the stomach. Rupture of minute gastric vessels is commonly found in acute infective processes.

SACHS.

Two Cases of Primary Sarcoma of the Stomach—MASCHKE, Berliner klin. Wochenschr., May 23, 1910.

While carcinoma is a frequent affection of the stomach primary sarcoma is rare. Hosch has found in 13,387 necropsies but 6 primary gastric sarcomata and Tilger in 3,500 autopsies met with but one instance of primary sarcoma of the stomach.—In the first case of the author the tumor was only detected at autopsy, although it was of not inconsiderable size. Evidently the tumor had not produced sufficient difficulty that a serious disease of the stomach could be suspected. The tumor was not diffuse infiltrating, but was rather

sharply circumscribed. In carcinomata the tumor is never sharply circumscribed. There existed no metastases. In the second case the tumor was of very large size, and had probably developed very rapidly to its gigantic proportions. Phenomena pointing to gastric disease had only supervened six weeks before death; they consisted of hematemesis, bloody stools and some pains in the epigastrium. These symptoms and the emaciation, anemia, palpable resistance in gastric region, absence of free HCl in gastric contents pointed to the presence of carcinoma. The clinical symptoms of gastric sarcoma are not essentially different from those of carcinoma of the organ, and the clinical diagnosis of sarcoma of the stomach is therefore very difficult and often impossible. Sarcoma in the pyloric region causes stenosis much less frequently than does carcinoma. Pyloric stenosis was only demonstrated in seven cases of gastric sarcoma. Intestinal sarcoma does also not give occasion to stenosis. Gastric sarcoma has been found in individuals between three and seventy-eight years; it occurs most often between the fortieth and fiftieth year. This fact may be of diagnostic value in the young, in whom carcinomata appear more rarely. The prognosis is unfavorable if the tumor is not removed sufficiently early   MILL.

Congenital Obliteration of the Bile Ducts—E. L. PECK, Archives of Pediatrics, June, 1910.

The entire number of cases of congenital obliteration of the bile ducts reported to date is less than seventy. The symptoms begin soon after birth, and, while there are variations in the course of the disease, the general resemblance is striking. From the ordinary icterus neonatorum these cases are distinguished by the more marked and persistent jaundice, the deeply bile-stained urine, and the usually colorless feces following stools of ordinary meconium. Very few of these babies reach six months of age, and at least one-third of the number die within the first two weeks. Death is preceded by emaciation, a deepening jaundice, sometimes vomiting and convulsions, and, in more than fifty per cent., by hemorrhage from various organs. Physical examination during life shows often enlargement of the liver and spleen.   WESTERN.

Pancreatitis from the Standpoint of the Clinical Surgeon—A. J. OCHSNER, Jour. A. M. A., May 28, 1910.

If we add to the symptoms of cholecystitis an area of tenderness from 5 to 10 cm. long located to the right of the umbilicus over the middle of the right rectus muscle in cases in which we can exclude a diagnosis of duodenal ulcer we have the typical symptoms on which to make a diagnosis of pancreatitis. In duodenal ulcers there are generally two symptoms which do not occur in pancreatitis: (1) pain before meals when the stomach is empty and (2) hyper-

chlorhydria with eructation. In pancreatitis there is frequently re-
ferred pain to the midscapular or left scapular regions. In gastric
ulcer the same pain is commonly present, but with this there is pain
on deep pressure at a point half-way between the ensiform appendix
of the sternum and the umbilicus. There are cases in which two or
more or all of these conditions are present in the same patient and
other cases in which it is possible only to determine the fact that one
or more of these conditions are present, while a strict differential
diagnosis may not be possible. In advanced cases there is usually
marked emaciation frequently with peculiar circumscribed areas of
fat in roll-like masses on the front and sides of the chest and ab-
domen. There usually occurs marked anemia, often approaching
chlorosis with degeneration of erythrocytes. Many of these patients
are affected with obstinate constipation while others have equally
troublesome diarrhea. Sugar is present in only a small proportion of
these cases.   WESTERN.

Metastasis of Uterine Carcinoma in Cecum—E. v. MIHÁLKOVICS, Zentral-
blatt f. Gynäkologie, 1910, No. 17.

From a woman, thirty-three years old, the uterus was removed
a year ago on account of carcinoma. For the last three months there
is a growing tumor in the cecal region. Histologically the tumor
has been shown to be a metastasis of the uterine carcinoma.
                                                            MILL.

Examination of the Appendix—W. ORLOWSKI, Zeitschr. f. klin. Med.,
Vol. LXX, Nos. 1 and 2.

Author was able to palpate the appendix in more than 50 per
cent. of his cases. He has repeatedly convinced himself that sensi-
tiveness and thickening of the appendix may also occur in healthy
individuals who have never had appendicitis. He does not attach
any diagnostic import to the pressure sensitiveness. at McBurney's
point.   WESTERN.

Chronic Appendicitis—F. J. STEWARD, The Practitioner, June, 1910.

Dyspepsia is frequently associated with chronic appendicitis.
Pain is produced after food stimulation, due in all probability to the
contractions of the inflamed appendix and cecum. The pain pro-
duced after the taking of food into the stomach may simulate that
produced by gastric ulcer. The tenderness may be high up and over
the position of either the stomach or duodenum, and so give rise to
a suspicion of gastric or duodenal ulcer. The author is not inclined
to belief that chronic appendicitis may give rise to hemorrhage from
the stomach. Firm pressure over the transverse or descending colon
will cause pain over the inflamed appendix.   SACHS.

Modern Fecal Examinations—H. URY, Internat. Beiträge zur Pathologie u. Therapie d. Ernährungsstörungen, I. 3.

A test diet is advisable to determine the exact functional activity of the intestine. The examination of excreted *undissolved* substances does not always reveal the nature of the disturbance. On the other hand, the examination of *dissolved* fecal substances may give valuable information as regards diarrheal affections. Inasmuch as the intestine, even in a state of increased peristalsis, withholds but small amounts of dissolved digestive products from absorption, the dissolved fecal material must have reached the intestinal canal from the body by processes of transudation and secretion.

WESTERN.

Sigmoiditis and Meso-Sigmoiditis—R. P. ROWLANDS, Lancet, April 30, 1910.

One of the most important causes of simple inflammation of the sigmoid is the presence of acquired diverticula in or near the sigmoid colon. The clinical symptoms and physical signs may closely simulate those of carcinoma of the sigmoid colon. It is very difficult to distinguish the two conditions even when the abdomen is opened. The diverticula project into a greatly thickened mesentery and their orifices are often so small that they can only be discovered by means of a probe. In the mimicry of malignant disease by inflammatory stenosis of the sigmoid colon, the following points may suggest the innocent nature of the obstruction: the long duration of symptoms, especially the history of life-long constipation; the absence of blood from the stools on repeated examination and the repeated occurrence of pus in the evacuations, especially in the absence of blood. The sigmoidoscope may be of value in excluding growths.

SACHS.

Hirschsprung's Disease—DE JOSFELIN ET DE JONG, Tijdschr. voor Geneesk-unde, 1910, I. No. 16.

History of a case of congenital megacolon. A boy, twelve years old, defecated but once every eight or ten days. The abdomen became more and more distended. Finally defecation did not occur for four weeks. A large swelling was felt per anum; the tumor pressed upon the rectum causing a big fold. Pushing of the tumor upward and pulling down of the fold caused copious evacuation of stool and gas. In spite of the introduction of a big tube patient collapsed and died. Necropsy showed gigantic distension of sigmoid flexure and transverse colon; these parts of the colon were hypertrophic and filled with large fecal masses. Between rectum and sigmoid flexure there was a large valvelike fold which entirely closed up the rectum from above.

WEBB.

Acute Perforations of the Hollow Viscera—B. B. DAVIS, Jour. A. M. A., May 14, 1910.

In every acute abdominal pain, the possibility of perforation of some part of the alimentary canal should be considered, and the case should not be dismissed as trifling till perforation has been definitely excluded. In every case of perforation there is an absolute indication for immediate operation.   WESTERN.

Perforation in Typhoid Fever—F. E. DUBOIS, Am. Jour. of Surgery, June, 1910.

In the majority of cases there are three symptoms which point to perforation: Abdominal pain, localized tenderness and rigidity. Pain is present in 75 per cent. of the cases, and in 50 per cent. of the cases its onset is sudden and severe, is apt to be paroxysmal, gradually becoming localized. It is often severe enough to cause the patient to cry out. One or more of these three symptoms may be absent; pain may be very slight and gradual in its onset and it may disappear; tenderness may be slight and it may have been present at various times during the course of the disease; the rigidity may be difficult to recognize and may be masked by a distended abdomen. But there are other signs and symptoms which are of assistance in arriving at a diagnosis. The pulse may be increased in rate, or there may be a change in temperature; often there occurs a fall in temperature to normal or subnormal, occasionally there is a rise. Liver dulness may be obliterated. A rising leucocyte count may be confirmatory. A rectal examination should always be made, for an area of tenderness may thus be demonstrated. Before reaching a definite conclusion as to the presence of a perforation in typhoid, several other conditions, which may closely simulate it, must be excluded. Chief among these is lobar pneumonia or diaphragmatic pleurisy. Hemorrhage, with its fall of temperature, may be confusing, but blood will soon be noted in the stools. Other conditions from which it must be differentiated are acute intestinal indigestion, the passage of a renal calculus, iliac thrombosis, appendicitis, a distended urinary bladder, cholecystitis and rupture of the gall bladder, a broken-down mesenteric gland and intussusception.

                                    WESTERN.

NERVOUS SYSTEM

A new Symptom in Tabes Dorsalis—H. HAENEL, Neurologisches Centralblatt, 1910, No. 9.

When the eye-ball of a healthy individual is pressed with one or two fingers toward the floor of the orbit, a pressure of from eighty to one hundred grams causes a pain resembling that of testicular

origin. In about half the cases of tabetics this pain will not ensue, although the pressure may greatly exceed that which is necessary to cause pain in the normal individual. The pressure must be applied from above downward and not in the anterio-posterior direction. The pressure sensitiveness does not seem to be due to the trigeminus, but may be in some connection with the sympatheticus.

<div align="right">WESTERN.</div>

Cerebral Monoplegia, with special Reference to Sensation and Spastic Phenomena—G. BERGMARK, Brain, March, 1910.

Author concludes that cortical lesions do not produce definite increase of the reflexes or the typical late contracture found in hemoplegia of capsular origin. On the other hand, early contracture is a common result of cortical lesions, and is due to cortical irritation. SACHS.

The Question of the Side affected in Hemiplegia and Arterial Lesions of the Brain—E. JONES, Quarterly Jour. of Medicine, April, 1910.

Author has studied from the point of view of the side of the lesion or of the hemiplegia 5281 cases of cerebral hemorrhage, thrombosis and embolism, and hysterical hemiplegia. In 3539 of these cases, the nature of the lesion was definitely determined by post-mortem examination. In none of these conditions was any evidence of pain to indicate that neither the lesion nor the hemiplegia is more apt to affect one side rather than the other. The general teaching to the contrary is not founded on any critical evidence.

<div align="right">SACHS.</div>

Polioencephalitis of the Cerebello-Rubro-Spinal System—A Cause of "Acute Tremor" in Children—L. PARSONS, British Jour. of Children's Diseases, June, 1910.

Polioencephalitis presents a symptomatology which varies greatly with the part of the brain chiefly affected. If it affects the mid-brain, nuclear palsies of the nerves which arise in this region, i.e., the third and the fourth, also lesions of the red nucleus and its connections may result and produce a characteristic tremor. The tremor is slow and regular; in rate about five per second. At its worst it is continuous except during sleep. It is increased by voluntary movements or during periods of excitement. It may be universal in the head, tongue, and muscles of the thorax, abdomen and limbs, and it is sometimes more definite in the proximal than in the peripheral parts of the extremities. Combined with the tremor is a hypertonus with a true absence of spasticity. SACHS.

Acute Syphilitic Meningitis—L. M. BONNET and N. GOUJAT, Lyon médical, 1910, No. 11.

Some syphilidologists doubt the existence of acute syphilitic

meningitis; its frequency, however, is not very rare. It appears mostly in the course of the well developed second stage and its onset is synchronous with the skin manifestations. Its symptomatology does not differ at all from that of other types of meningitis. The cerebrospinal fluid is of diagnostic value; it is usually clear and transparent, rarely it is slightly turbid. Lymphocytosis occurs in the majority of the cases, occasionally pronounced leucocytosis is encountered. The prognosis is always dubious.　　　　ZIMMER.

Otitic Meningitis—L. D. BROSE, Lancet-Clinic, June 18, 1910.

The diagnosis of otitic meningitis may offer at times great difficulty. When the disease runs a rapid and acute course there will be fever, mostly of a continuous type, especially high when the covering of the brain convexity is involved, rapid pulse, lancinating headache, which may be frontal, occipital, one-sided or general; irritability, photophobia, clonic or tonic spasms, or paresis of the eye muscles, vomiting without nausea, constipation, and at times optic neuritis or choked disk, paralysis and coma, ending in dissolution. When the disease takes a more protracted course, several weeks or longer, its recognition offers greater difficulty, and one may have to differentiate it from one of the acute infectious diseases, such as typhoid fever, influenza, pneumonia, septicemic pus phlebitis, brain abscess and miliary tuberculosis.—In typhoid fever the cerebral symptoms occur late and after a typical temperature curve. Instead of constipation one looks for diarrhea, intestinal hemorrhage, splenic enlargement, roseola and positive Widal reaction. In pneumonia there is no suppurating ear, but the presence of lung consolidation. The same is true of miliary tuberculosis. When all other symptoms have failed to point out the correct diagnosis, examination of the cerebrospinal fluid obtained through lumbar puncture, as a rule, will furnish not only conclusive evidence that meningitis exists, but aids us in forming an opinion as to the nature of it.　　WESTERN.

Examination after from 15 to 20 Years of Instances of Chorea Minor—G. FORSSNER, Jahrbuch f. Kinderheilkunde, Vol. LXXI, No. 1, 1910.

Of twenty-three cases, fourteen when re-examined after from 15 to 20 years, exhibited pronounced symptoms of a chronic disease which could not be considered a complication of chorea. According to author chorea affects especially constitutionally weak individuals, and many of those who had chorea when young acquire various chronic diseases in later life.　　　　MILL.

Diagnosis of Neurasthenic Pain; Nervous Palpitation and Angina Pectoris—J. KOLLARITS, Deutsche med. Wochenschr., April 21, 1910.

Unlike the pain in the course of other affections, the muscular, articular and dorsal pain of neurasthenic character, and occasionally

neurasthenic cardiac palpitation and pseudo angina pectoris, are relieved on exercise.   MILL.

Symptomatology of Hysteria—H. GOLDBLADT, Münchener med. Wochenschr., May 31, 1910.

Author advances two new symptoms of hysteria. The first is of a subjective nature and consists of a troublesome sense of dryness in the mouth and occasionally in the trachea. The other symptom is an objectively noticeable vaso-motor phenomenon. The red color on the cheeks of hysterical individuals exhibits frequently a somewhat edematous character and a light bluish hue. If this phenomenon is well pronounced one receives the impression that the individual has applied a thick layer of blue-pinkish powder; if it is not marked it may be made more distinct by weak, local irritation. This bluish-pink, slight swelling is generally localized upon both cheeks; often also upon the middle forehead; occasionally it is found all over the face, rarely it is unilateral and confined to one cheek.   MILL.

Association of Psychosis and Leprosy—J. MOREIRA, Allgemeine Zeitschr. f. Psychiatrie, Vol. LXVII, No. 2, 1910.

The association of psychosis and leprosy occurs rarely. A specific leprotic insanity does not exist; polyneuritis leprosa may be accompanied by Korsakow's syndrome; all possible forms of psychosis have been observed in leprosy, and they are dependent in a measure upon the complications of the leprosy. Generally speaking, the habitual mental state of the leprotic is influenced by endogenous and ectogenous general factors; a mild psychical depression often supervenes.   WESTERN.

URINARY ORGANS—MALE GENITALIA

Polypi in the Urethra—A. SCHLENZKA, Folia Urologica, Vol. IV, April, 1910.

Polypi of the anterior and posterior urethra, on account of their great mobility, may give rise to irritation by which the nervous symptoms of the patient may find their explanation. The diagnosis of urethral polypi is facilitated by Goldschmidt's irrigation urethroscope, because the polypi are raised or vacillate when irrigated.   PAGE.

Obstipation Albuminuria—Roubitschek, Berliner klin. Wochenschr., May 2, 1910.

Artificial obstipation in animals probably causes venous congestion leading to albuminuria; the latter is characterized by the appearance of at first small and later larger amounts of albumin. In

the urinary sediment there are met with at the onset red and white blood cells, later some granular and epithelial casts and finally a few hyaline casts.   MILL.

The Value of the Indigo-Carmin test in Functional Renal Diagnosis— W. BAETZNER, Deutsche Zeitschr. f. Chirurgie, Vol. CIII, Nos. 3-6.

Fifty case histories of patients with all kinds of renal disease, as tuberculosis, nephrolithiasis, hydronephrosis, tumors, essential renal hemorrhage, hemorrhagic nephritis, etc. A positive reaction is of value as far as the recognition of the renal function is concerned; in conjunction with the other diagnostic means the reaction will be of especial import. The negative reaction is of little value.
                                                               MILL.

Acute Pyelitis due to Bacillus Coli as it occurs in Infancy—J. THOMSON, Quarterly Jour. of Medicine, April, 1910.

The disease is commoner before than after the second year of life. It is more frequent in females than males, and more frequent in bottle-fed than breast-fed children. The cases are characterized by the extreme severity of their general symptoms and the trivial and equivocal nature of the local manifestations. The children are very ill, and yet there is nothing distinctive to be found beyond a little pus in the urine. The temperature runs up rapidly often reaching 104 deg. F. or higher, and assumes a remittent type. Along with the sudden rise of temperature, there is in a considerable proportion of cases, either a noticeable shiver or a definite, well-marked rigor. The children are drowsy and often delirious. They are also restless, very miserable, and tender to touch all over. The blood shows some degree of leucocytosis. The local symptoms are either very slight or seem to be quite absent. The characteristic features of the urine are the presence of a considerable number of pus cells and clumps of bacilli coli and a very distinct acid reaction. Three facts which are of importance clinically are: (1) at the time the temperature first rises pus is rarely, if ever, to be found in the urine; it always appears, however, in a few days; (2) the pus may at a later stage disappear from the urine for a day or two and then reappear; (3) although the urine is acid on passing, it tends rapidly to become alkaline on standing, and thus it is often difficult to distinguish pyelitis from cystitis. The diagnosis of pyelitis in children due to the bacillus coli rests on two things: the presence of pus in the urine along with the severe general symptoms just described and the absence of any ascertainable organic disease of other parts sufficient to account for these severe symptoms. Acute pyelitis is often mistaken for meningitis owing to the severe nervous and general symptoms which it occasions.
                                                             SACHS.

Renal Senescence—J. WALSH, Jour. A. M. A., June 4, 1910.

There is a gradual increase in the amount of interstitial tissue at the apex of the renal pyramids so uniform with advancing age that the age of the individual is evident from the amount of interstitial tissue found. This relation of the amount of interstitial tissue to the age is lost in cases of pyelonephritis and hydronephrosis; and modified by interstitial nephritis, though this modification can be accounted for, so that the age remains evident.   WESTERN.

Hemoglobinuric Nephritis in Pneumonia—W. DOEVENSPECK, Deutsche med. Wochenschr., May 19, 1910.

In three cases of croupus pneumonia there were found in the urine numerous casts of blood pigment which disappeared very rapidly. A genuine nephritis had evidently not existed, but only a renal irritation.   MILL.

Hypernephromata—L. B. WILSON, Old Dominion Jour. of Medicine and Surgery, April, 1910.

An exhaustive article with the protocols of 32 cases and a number of excellent illustrations. Author appends the following summary: The small solid tumor well away from the renal pelvis is likely to cause no hematuria and no pain. From such there should also be no venous metastases. Since they are apt to be symptomless their surgical discovery is an accident. But granting that all hypernephromata probably pass through such a stage, the nearer we can come to recognizing it the better it will be for the patients.—Small amounts of blood in the urine usually come from the kidney side of the condensation "capsule" of the tumor. Large renal hemorrhages are from the thin-walled capillaries of the tumor where it has broken through the capsule into the kidney tissue, or into the renal pelvis.—The compression by the tumor of the remainder of the kidney, of the renal pelvis, or of adjacent nerves, as well as the presence of clots in the ureter explains the various types of pain.—Tumors of the superior pole are apt to cause the more early distortion of the renal pelvis and apparently also earlier and more pronounced pain, owing to the relationships of liver and diaphragm.—Tumors of the mid-ventral side of the kidney are apt to develop slowly and cause only small amounts of hematuria and pain. Tumors of the lower pole may be large enough, before the kidney tissue is all destroyed, to block the ureter and cause varying degrees of hydronephrosis.— The renal pelvis may be encroached upon from above, from below or from the side. In either event there is more or less of a compensatory enlargement in other directions, even where no ureteral obstruction is demonstrable. On the other hand, there may be no deformity of the renal pelvis, or it may be entirely obliterated. These

points are of importance in interpreting the Röntgen pictures of the renal pelvis made after collargol injections, a method of diagnosis so satisfactorily developed by Braash.—Early extension of the tumor into the renal vein may temporarily lessen the pressure in the renal pelvis. The capsule of the portion of the tumor projecting into the vein is apt to be very thin. Extensive renal vein involvement at the time of operation usually means the early death of the patient from metastatic recurrence.   WESTERN.

FEMALE ORGANS OF GENERATION—PREGNANCY—PARTURITION—INFANTS

Leucorrhea—P. DALCHE, Gazette des Hôpitaux, 1910, No. 40.

Leucorrhea is the pathological excretion which is caused by augmentation and alteration of the normal secretions of the female genital apparatus, or it is the pathological increase and alteration of the physiological uterine and vaginal secretion. The vaginal secretion is fluid, milky-turbid and reacts acid; the secretion of the uterus differs according to its origin from the body or neck of the organ— it is transparent and gelatinous when from the cervix, brownish when it is derived from the body of the uterus.   ZIMMER.

After-Results of the Removal of both Appendages—A. E. GILES, Jour. of Obstetrics and Gynecology of British Empire, April, 1910.

The removal of both ovaries and tubes has no marked detrimental effect on the subsequent health, for 78 per cent. of the patients were in very good health afterwards, and a further 13 per cent., though suffering in different ways, were better than before the operation. The likelihood of later trouble developing in connection with the uterus when that organ is left, is relatively small, as such an occurrence took place in only seven cases out of 105. Menstruation continues after these operations in about 40 per cent. of the cases.   SACHS.

After-Results of Hysterectomy for Uterine Fibroids and Fibrosis—A. E. GILES, Jour. of Obstetrics and Gynecology of British Empire, May, 1910.

The effect on the general health of hysterectomy for fibroids is very satisfactory, inasmuch as 70 per cent. of the patients were in very good health after the operation, and as many as 96 per cent. were better than before the operation. The fate of the cervical stump after supra-vaginal hysterectomy need cause no apprehension; in 181 cases there was not one that showed any sign of malignancy.

In cases of fibrosis, however, it is important to be sure that the whole of the body of the uterus is removed, as a small portion of the same may keep up hemorrhage. After supra-vaginal hysterectomy, menstruation, or at least a monthly discharge of blood may take place if only a small portion of the body of the uterus has been left behind. The removal of the uterus brings about the true menopause a good deal earlier than the usual time. In case where a myomectomy is done instead of a hysterectomy, the general health after operation is also very good, 85 per cent. of the patients being in quite good health, or at least better than before the operation. The likelihood of recurrence of fibroids is relatively small, 90 per cent. being free from it after periods varying from one to seven years. The menstrual loss is moderate or even scanty in about 85 per cent. of cases, many of the patients stating that the loss was less than before the operation. The uterus from which the fibroids have been removed may be serviceable for child-bearing.   SACHS.

After-Results of Operations for Uterine Displacements—A. E. GILES, Jour. of Obstetrics and Gynecology of British Empire, June, 1910.

The effect of hysteropexy on the general health is very good, as 90 per cent. of the patients were better than before the operation. Symptoms are markedly relieved; 90 per cent. of the patients had either no pain or had less pain than before the operation. Frequency of micturition was entirely or greatly relieved in 77 per cent. of the cases. The position of the uterus remains permanently good in about 95 per cent. of the cases; about 5 per cent. suffer from partial or complete return of displacement. In the event of pregnancy following hysteropexy, there is a slight tendency to miscarriage if pregnancy follows too soon the operation. Hysteropexy causes no subsequent complication of labor, and the position of the uterus is not disturbed.   SACHS.

Functional Disorders of the Bladder in the Female simulating Cystitis— A. STEIN, Am. Jour. of Obstetrics and Diseases of Women and Children, Vol. LXI, No. 5, 1910.

Women with some gynecological trouble frequently have bladder symptoms. These symptoms usually consist of frequent and painful micturition, and occasionally it is specified that the pain occurs before, during, or after emptying the bladder, or that the pains are especially marked during the menstrual period. A great number of ailments situated outside of the bladder can give symptoms which correspond to those of a real cystitis. We know by experience that the pathological conditions of the female generative organs only too frequently involve the bladder, though the bladder mucous membrane itself has not undergone any change (that is, when there is no

real cystitis). Again, changes in the independent nervous system of the bladder or changes in the general nervous system can cause the typical symptoms of a cystitis without a true cystitis really existing. In spite of these facts the opinion still prevails that a cystitis must be present whenever there is a frequent desire to urinate. Bladder symptoms without a cystitis may be manifold. Pain before, during or after urination, a frequent or diminished desire to urinate, tenesmus, paralysis of the bladder, a retention or incontinence on a nervous basis, dribbling of urine, with or without retention, may all be the result of pelvic disorders outside of the bladder or of some systemic disease. There may be cases in which there is some pathological change or irritation of the nerve center of the bladder wall itself; cases in which there is some pathological change in the genital organs, and cases in which there exists some general nervous trouble or systemic disease. PAGE.

Local Recurrence after Removal as a Sign of Malignancy in Tumors of the Female Mamma—G. T. BEATSON, Edinburgh Med. Jour., June, 1910.

When local recurrence after removal of a tumor of the female mamma occurs, the surgeon regards it as having a distinct bearing on the nature of the primary growth for which he operated, and he usually considers it to be one of the most distinct features of malignancy or semimalignancy in the original neoplasm. Author reports two cases which show that this view may not always be the correct one. A portion of the normal gland tissue left behind after the removal of the mamma for a neoplasm, may remain quiescent for years, and then subsequently become active and take on the character of the primary growth for which operation had been previously done. SACHS.

The Slow Pulse in the Puerperium—LEWISOHN, Monatsschr. f. Geburtshilfe u. Gynäkologie, April, 1910.

Diminished pulse frequency is characteristic of the physiological puerperium. It can be only studied when delivery had been normal and spontaneous, and in the absence of lacerations. The slow pulse may not disappear when the woman leaves the bed, but, on the contrary, it may only supervene after she had been up and about. The diminished current of blood to the heart after parturition is the cause of the bradycardia; as a consequence of the retarded metabolism the automatic irritation of the cardiac musculature ensuing in contraction, occurs less frequent than before. MILL.

Differential Leucocyte Count in the Diagnosis and Prognosis of Puerperal Sepsis and Inflammatory Gynecological Affections—K. LOGOTHETOPULOS, Gynäkologische Rundschau, Vol. IV, No. 6.

Examination of 35 cases with 345 separate examinations. The cases consisted in part of such of puerperal sepsis, in part of inflammatory processes, as gonorrheal pelveoperitonitis, tumors of the adnexa, purulent parametritis, post-operative peritonitis, etc., and also of 5 instances of extra-uterine pregnancy and 2 instances of malignant ovarian tumors with marked intra-abdominal hemorrhage. The number of leucocytes fluctuated between 11,000 and 54,000. The number of leucocytes does not permit of any definite conclusions; often repeated blood examinations in the course of an infection may furnish a limited diagnostic and prognostic means, but only in connection with, and the proper valuation of the other clinical phenomena. Marked decline of the percentage amount of lymphocytes as well as increase of the percentage amount of neutrophiles point to the presence of a grave infection. Continuous or progressive decline of lymphocytes is prognostically unfavorable; so is their sudden decline. Increase of lymphocytes, on the other hand, is prognostically favorable.   MILL.

Pregnancy and Diabetes—F. HIRSCHFELD, Berliner klin. Wochenschr., June 6, 1910.

There exists a diminished tolerance for carbohydrates in the majority of non-diabetic pregnant women. In diabetic women the diabetic phenomena become aggravated in the third or fourth month of gestation. Diabetic coma does as a rule not set in during gravidity and also not directly after parturition. The aggravation may become permanent, but an amelioration may slowly ensue after parturition. The disappearance of the glycosuria after parturition is dependent upon the reduced diet which is the rule in the lying-in chamber.   MILL.

Transitory Hypertrichosis due to Pregnancy—ZELLINGHAUS, Zentralblatt f. Gynäkologie, 1910, No. 14.

Description of a case of hypertrichosis on abdomen and face. The hair appeared about in the fourth month of gravidity and attained a length of from 1.5 to 2 cm. Six months after parturition the hair had disappeared without any treatment.   MILL.

Bibliography

THE SURGERY AND PATHOLOGY OF THE THYROID AND
PARATHYROID GLANDS. By ALBERT J. OCHSNER, A.M., M.D., LL.D.,
Professor of Surgery in the Medical Department of the University of Illinois,
Chief Surgeon to Augustana Hospital and St. Mary's Hospital, Chicago,
and RALPH L. THOMPSON, A.M., M.D., Professor of Pathology in the St.
Louis University School of Medicine, St. Louis. With 57 Illustrations
in the Text and 40 Full-Page Plates, 4 of the Plates being in Colors.
St. Louis, C. V. Mosby Company, 1910.

The book is divided into two parts, the first treating of the
thyroid gland, the second of the parathyroid glandules. The first
part covers the following ground: Surgical consideration of the
thyroid gland—Pathology of the thyroid gland—Diagnosis—Non-
surgical treatment—Anesthesia—Dangers of operation—Indications
for operation on the thyroid gland—Thyroidectomy—Other opera-
tions on the thyroid gland—Prognosis in exophthalmic goitre—He-
redity in goitre.

This first section, excepting the chapter on pathology, has been
written by Dr. Ochsner; this chapter and the section on the para-
thyroid glandules have Dr. Thompson for their author.

The section on the parathyroid glands deals with the following
subjects: Function—Anatomy—Embryology and histology—Patho-
logical histology of the parathyroid glands—Cysts and tumors—Re-
lation of the parathyroid glands to postoperative tetany—Surgical
accidents in man due to removal of the parathyroid glandules—Re-
lation of the parathyroid glands to medical tetany—Parathyroid
therapy.

The chapter on "Diagnosis" (of exophthalmic goitre) alone
fills 36 pages; it embraces the entire field and may be used with equal
advantage by the internist as well as the surgeon. The section on
"The parathyroid glandules" is extremely interesting and instruc-
tive; it is readily understood by the medical man who is not partial
to abstruse literature. By the publication of their book, the authors
have rendered a distinct service to the American medical profession.
Great credit is due the publishers for the superior mechanical quali-
ties of the handsome volume.   H.S.

CLINICAL TREATISES ON THE PATHOLOGY AND THERAPY OF
DISORDERS OF METABOLISM AND NUTRITION. By PROF. DR.
CARL VON NOORDEN, Vienna. Part VIII.: Inanition and Fattening Cures.
Part IX.: Technic of Reduction Cures and Gout. Authorized American

edition. Edited and translated under the supervision of ALFRED C. CROFTAN, M.D., Chicago. New York, E. B. Treat & Co., 1910.

These little monographs, well prefaced and edited by Dr. Croftan, will be of value to him who does not possess larger and more serious works upon the subjects of which they treat. The author has long ago started to repeat himself; the present booklets, it is true, are practical enough, but they do not bring us a new message.

H. S.

MEDICAL ELECTRICITY AND RÖNTGEN RAYS. With Chapters on Phototherapy and Radium. By SINCLAIR TOUSEY, A.M., M.D., Consulting Surgeon to St. Bartholomew's Clinic, New York City. Containing 750 Practical Illustrations, 16 in Colors. Philadelphia and London, W. B. Saunders Company, 1910.

We are, indeed, sorry that the limited space at our disposal prevents us from giving an extensive review of this very complete and very excellent work of Dr. Tousey. We know of no other book on medical electricity which is so replete with serviceable, reliable and first-hand information. We heartily recommend its purchase to all who are interested in electro-diagnosis and therapy.   T. F. R.

THE

ARCHIVES OF DIAGNOSIS

A QUARTERLY JOURNAL DEVOTED TO THE STUDY
AND THE PROGRESS OF DIAGNOSIS AND PROGNOSIS
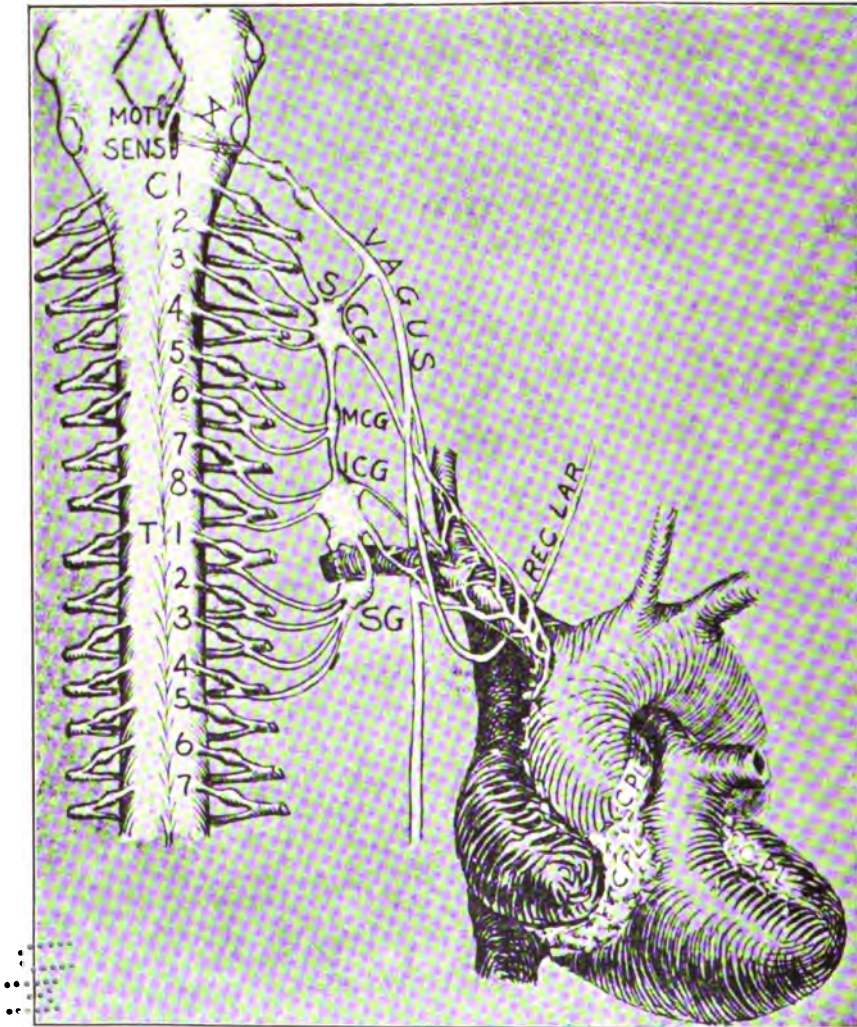
Origin and Course of the Cardiac Nerves.—Mot, Sens. nuclei of the efferent (motor) and afferent (sensory) fibers of the vagus. C. 1, 2, 3, 4, 5, 6, 7. 8, and T, 1 to 8, cervical and thoracic (dorsal) spinal nerves. SCG, MCG, ICG, superior, middle and inferior cervical ganglia. REC LAR. recurrent laryngeal nerve; CPL, cardiac plexus. (From Powell and Gibson).

Pharmaco-Diagnosis of Cardiac Diseases

Albert Abrams

THE

ARCHIVES OF DIAGNOSIS

A QUARTERLY JOURNAL DEVOTED TO THE STUDY AND THE PROGRESS OF DIAGNOSIS AND PROGNOSIS

Special Articles

PHARMACO-DIAGNOSIS OF CARDIAC DISEASES

By ALBERT ABRAMS

Consulting Physician, Mount Zion and French Hospitals; Formerly Professor
of Pathology and Director of the Medical Clinic, Cooper
Medical College (Medical Department of Leland
Stanford Junior University)

San Francisco

In a recent work,[1] diagnostic pharmacotherapy is discussed from the viewpoint *"Naturam morborum curationes ostendunt."* This is the equivalent of a *Diagnosis ex juvantibus.* Here, succinct reference will be made to the employment of drugs in the diagnosis of some affections of the heart.

The Heart Reflex.[2]—The reflex in question is a contraction of the myocardium of varying duration when the skin of the precordial region is irritated with a blunt instrument, a towel or a series of percussion blows.

The reflex may be observed with the X-rays or, by accurate percussion of the heart before and after cutaneous irritation.

In the norm, according to Zulawski,[3] the *"Abrams'sche Herzreflex"* reduced the dulness of the heart from 1 to 1½ cm., and is of short duration; whereas in cardiectasis, as Merklen and Heitz have shown,[4] *"Le reflexe cardiaque d'Abrams,"* may persist for several hours.

This reflex may also be discharged by irritation of the mucous

membranes, psychic influences and percussion of the muscles, but the most effective method of provoking it is by means of concussion of the spine of the seventh cervical vertebra.

The rationale of the latter method is understandable by consulting accompanying illustration. The spinous process of the seventh cervical vertebra corresponds to the third dorsal segment of the spinal cord which in turn corresponds to the root-origin of the third thoracic nerve. The association of the latter nerve and the inferior cervical ganglion is shown in the illustration.

The writer has demonstrated empirically, that the best site for stimulating the vagus and thus increasing the force of cardiac contraction and cardiac tonicity is the spinous process of the seventh cervical spine, that the most effective excitant of the heart reflex is concussion which is a mechanic stimulus and that the reflex in question may be evoked with the same certainty and precision as are the reflexes by the vivisectionist in his laboratory. In the frog, two sets of separate fibers are present in the vagus; one set modifies the heart-rate only (chronotropic effect), the other set has no influence on the rate but increases the size and force of the contraction (augmentor effect), and the cardiac tonus. In the human heart, concussion as a rule has only an augmentor effect, although in three cases of Basedow's disease, such concussion showed a decided diminution of the heart-rate.

Atropine paralyzes the motor endings of the vagus. An injection of 0.001 gm. (gr. 1/60) of the latter drug will manifest its action within thirty minutes and will disappear in from one to three hours. During the full physiologic action of the drug the heart reflex is abolished. Small doses of pilocarpine are antagonistic in their action to atropine.

After an hypodermatic injection of pilocarpine (gr. 1/10), one notes an exaggeration of the heart reflex. Thus the degree of myocardial recession (heart reflex) as determined by percussion after irritating the precordial skin was 2 c.m., whereas thirty minutes after the injection of pilocarpine, like cutaneous irritation elicited a heart reflex measuring 4 c.m.

Adams-Stokes Syndrome.—The majority of cases of heart block are caused by lesions of the auriculo-ventricular bundle but there are also neurogenic forms of the disease due to over-stimulation of the

vagus. The use of atropine (which paralyzes the vagi) in the manner already cited removes the block in the neurogenic forms (pulse-rate becomes rapid), whereas in the myogenic forms the heart block is unaffected.

In other words, atropine will increase the pulse-rate in all cases of bradycardia due either to direct or reflex excitation of the vagus. In cases of complete heart block, the rate of auricular systole will be augmented but the ventricle will be uninfluenced. Therefore, in the study of bradycardia, one is constrained to compare the relations of the radial pulse, the impulse of the heart and the venous pulse in the jugular.

It is well to remember that partial heart block may be provoked by the inordinate use of digitalis.

Tachycardia.—Aconite (tincture is most reliable) slows the heart by vagus stimulation and has only a slight action on the myocardium. If aconite slows the pulse in tachycardia, diminished tonic activity of the vagi may be assumed to exist. If atropine is used between the attacks of paroxysmal tachycardia, and no attack ensues, one may conclude that paralysis of the vagi is not responsible for the paroxysms.

In tachycardia from vagus paralysis, the heart does not respond to digitalis because the latter ordinarily inhibits the rapidity of cardiac action by stimulation of the vagi. Here, strophanthus is more effective because it slows the heart by direct action and not by vagus stimulation.

Arrhythmia.—Vagus stimulation not only slows the heart-rate, but may also create irregularities in rhythm. If this vagus influence is eliminated by atropine, the irregularities will disappear and thus the neurogenic nature of the irregularity is demonstrated. Irritation of the mucosa of the nasal septum opposite the middle turbinate bone will evoke an arrhythmia of vagal genesis. Here the irritation is conveyed indirectly to the vagus by the trigeminus. If the nasal mucous membrane has been cocainized, irritation of the mucosa by means of a probe will not evoke arrhythmia. The diagnostic value of cocaine in such instances is evident, and by cocainizing first one and then the other side of the nose, the source of irritation may be localized and by correcting the nasal anomaly the arrhythmia may be cured.

One must not forget the reflex arrhythmias caused by gastro-

intestinal irritation. Treatment of the latter directs attention to the origin of the alterations in cardiac rhythm.

The writer has noted in himself and others, arrhythmia when an intercostal neuralgia implicated the upper dorsal nerves.

Such an arrhythmia usually yields at once to freezing applied at the vertebral exits of the sensitive nerves.[5] It is well to recall that arrhythmia may ensue from the cumulative action of digitalis due to stimulation of the vagi. It has been found that this tendency is obviated if the vagi have been previously paralyzed with atropine but the use of the latter drug with digitalis is to be deprecated, insomuch as digitalis cannot augment cardiac tonicity if the heart reflex is annihilated by atropine.

Myocardial Diseases.—Continental writers find that when the heart reflex can be elicited in myocardial weakness, it indicates a favorable prognosis. Here, the retraction of the left ventricle after precordial excitation is accepted as a criterion.

My results are not in accord with the latter observations; it is the duration and not the presence of the reflex which counts. In the norm, the reflex lasts from one-half to three minutes; in myocardial disease, it may persist for hours. In the latter instance, this heart reflex of degeneration corresponds with the reaction of degeneration, viz., a muscular contraction which is tardy and persistent.

Myocardial disease may be suspected even in the absence of cardiac signs, when symptoms not unlike those which accompany the broken compensation of valvular diseases present themselves. A reliable preparation of digitalis may solve the difficulty; if, after five days, the symptoms are not relieved and there is no rise of the peripheral arterial tension nor increased strength of the pulse, the drug can do no good and may even be dangerous. Many preparations of digitalis are practically inert, and this fact may be demonstrated by its physiologic action. Within thirty-six hours after the use of a reliable preparation given in adequate doses, one finds that the pulse becomes stronger, more regular and slightly decreased in frequency (provided the pulse was accelerated before the use of digitalis) and diuresis is augmented. By estimating the quantity

*Elsewhere, the writer has shown that firm pressure at the exit of the dorsal spinal nerves will alter the character of the radial pulse to the extent of inhibition in most instances.

of urine excreted one is afforded a guide in a dual direction: the reliability of the drug and the efficiency of the cardiac muscle. In cardiac muscular insufficiency, the quantity of urine may be diminished by one-half or more. Owing to the delayed action of digitalis, an increase in the quantity of urine does not occur until the second day of its use; then it continues to increase day after day until the normal is attained (1500 c.c. in twenty-four hours in a healthy adult); at this time, and when the pulse frequency has been reduced and the tension is increased, one should withdraw the drug, reduce the dose, or give it less frequently.

In using digitalis for diagnostic or therapeutic purposes, the writer first unloads the bowels and diminishes hepatic congestion with a few small doses of calomel. He gives a reliable fresh infusion of digitalis in doses of 4 fluid drachms combined with diuretin (sodio-theobromin salicylate).

Diuretin is administered in doses of 15 grains; it is a powerful diuretic and antagonizes the vasoconstrictor components of digitalis. The more recent researches of Löwy seem to show that digitalis dilates the coronary and renal vessels. The latter pharmacologic observation, however, is not wholly in accord with the clinical results.

It is often impossible to differentiate between a primary myocarditis and a primary nephritis.

. If digitalis causes diuresis, one may conclude that the previous oliguria was caused by a failure in the circulatory apparatus, because its effects are secured by its stimulating action on the heart and blood vessels. If drugs like theocin, diuretin and calomel are effective, we conclude that the effects are attained by direct action on the renal epithelium.

In the differential diagnosis of primary myocarditis and primary nephritis, Winternitz has suggested the catalase test. In chronic nephritis, the catalase of the blood is destroyed, hence, when the latter is brought into contact with hydrogen peroxide, there is absolutely no liberation of oxygen whereas the blood of patients with heart enfeeblement splits peroxide. Others concede the importance of this test only in advanced cases of nephritis either in the uremic or preuremic states.

The symptoms of broken compensation from myocardial disease

may be quickly differentiated from a host of other maladies by stimulation of the myocardium by concussion of the seventh cervical spine. Even within a few minutes after concussion is executed, cyanosis, dyspnea and other signs of an insufficient myocardium become less evident or disappear for several hours and for a longer interval with repetition of the concussion. To the uninitiated, it is impossible to conceive the great possibilities of this very simple mechanical method of cardiac stimulation. The writer has seen several practically moribund patients with pneumonia in whom the conventional cardiac stimulants were employed without avail, yet these very patients were not only revived but were revived quickly by the method in question. In myocardial disease, when it is a question of fortifying the jaded cardiac musculature, the writer no longer employs drugs but relies solely on concussion of the seventh cervical spine. When the latter fails, the cardiac musculature is no longer capable of restitution.

When rapidity of action from drugs is desirable in diagnostic-therapeutics, much may be expected from the intravenous employment of strophanthin. Thus administered, its action is fully manifested within sixty minutes. Administered by the mouth, its action is not evident for at least seventeen hours. When it is remembered that the physiologic action of digitalis is not manifested for at least thirty-six hours, it is not difficult to note the many advantages accruing from the intravenous employment of strophanthin. A single injection of the latter drug is capable of fully restoring a patient with cardiac incompetency. The dose of strophanthin (a reliable preparation is that of Thomas) is from $\frac{1}{4}$ to $\frac{1}{2}$ mg. (gr. 1/240 to 1/120). It is also procurable in sterile vials.

In suspected myocardial disease due to lues, a positive Wassermann reaction may prove as valuable as the same reaction in the diagnosis of luetic aortic insufficiency and the subsequent therapeutic results with mercury and potassium iodide will clinch the diagnosis.

To appreciate the diagnostic-therapeutic value of digitalis, one must recognize its action which may be divided into two periods: (1) therapeutic stadium, in which the cardiac force is increased; (2) toxic stadium, when such force is diminished. In the first stadium, slowing of the pulse is slight, whereas in the second stadium, it is very much diminished in frequency, and may even become arrhyth-

mic. This excessive slowing of the pulse may be accepted as the primary signal of the toxic action of digitalis. The chief effects of digitalis are exerted on the heart muscle, and the greater the integrity of this muscle, the better the action of this drug on the heart; hence such reaction may be accepted as a diagnostic indication of the condition of the cardiac muscle. Thus, the more intense the myocardial degeneration, the more susceptible is the reaction to small quantities of digitalis. If, instead of securing the physiologic action of digitalis, toxic effects are observed, one would conclude that the myocardial changes were pronounced. In such instances, the use of digitalis is positively dangerous.

Cardiac Asthma.—Dyspnea resembling this affection may be excited by irritation of the nasal mucosa and here cocaine applied to the latter by arresting the attack establishes the diagnosis.

In differentiating cardiac from bronchial asthma, the former may be prevented by cardiotonic medication whereas bronchial asthma is uninfluenced unless a dilated right ventricle complicates the disease.

Acute failure of the ventricles is commonly present in cardiac asthma and the attack may be at once jugulated by concussion of the seventh cervical spine.

Râles are usually absent in cardiac asthma unless complicated by lung edema. Amyl nitrite inhalation causes the râles due to bronchial spasm to disappear and is without influence on the râles caused by mucous or fluid in the bronchial tree.

In differentiating the stasis-catarrh of cardiac disease from a pulmonary affection, notably pneumonia, the test of Falk and Tedesko[6] may be used. It is based on the fact that salicylic acid and its salts given by the mouth may be found in any of the serous fluids (pleura, peritoneum, bursæ and inflammatory exudates) but not in glandular secretions (saliva, bronchial mucosa). No trace of salicylic acid is found in the sputum in diseases limited to the bronchi, but in pneumonia, the salicylate appears in excessive quantities. The salicylate is detected in the sputum by the addition of ferric chlorid which yields a violet color. It is best to extract the drug with a volatile solvent and after evaporating to test the residue with ferric chlorid.

Ventricular Dilatation.—In differentiating this condition from a pericardial exudate, the heart reflex is invaluable. If the area

of precordial dulness is modified after cutaneous irritation, cardiectasis and not an exudate is present.

Resistance gymnastics may be employed for a similar object; a diffused cardiac dulness caused by cardiectasis recedes usually within an hour whereas the dulness of a pericardial exudate is uninfluenced by the resistance movements.

In differentiating between an exudate in pericarditis and a transudate in hydropericardium, digitalis, may be employed. If the diffused cardiac dulness becomes less evident, it is an index in favor of a hydropericardium against an exudate caused by pericarditis. True, the augmented diuresis may diminish the area of precordial dulness in the latter affection, yet by so doing, it will bring into evidence pericardial friction sounds which would suggest a pericarditis as a cause for the presence of the pericardial fluid.

Angina Pectoris.—The pains of false angina are at once subdued by sufficiently large doses of antipyrin, whereas in true angina there is no relief; in fact, the pains may be accentuated, owing to the internal vasoconstriction of the drug.

Inhalation of amyl nitrite is a specific in arresting anginoid symptoms and when it fails, it may be because the drug irritates the nasal mucosa causing a heart reflex with further constriction of the coronary arteries. In such instances one must cocainize the nasal mucosa, or the drug may be inhaled through the mouth.

Anginoid symptoms caused by a dilated thoracic aorta are not uncommon. Here, concussion of the seventh cervical spine (which contracts the aorta as well as the heart) will cause an immediate evanescence of the symptoms.

In the experience of the author based on careful percussion and orthodiagraphic findings during attacks of true angina, the heart may be either dilated or contracted.

The former condition is at once relieved by concussion of the seventh cervical spine whereas in the latter, the signs are accentuated.

It is the contracted heart in angina which yields to amyl nitrite, for the effect of the latter drug is to dilate the organ.

There are many theories concerning the causation of anginal pains ranging from contraction to acute dilatation of the heart. The use of atropine should definitely settle many of the prevailing

theories.   Thus, an anginal attack which does not yield to atropine cannot be caused by a contracted heart with its associated ischemia of the myocardium.   In the event of an acute dilatation of the heart being present, atropine would only accentuate the symptoms insomuch as the writer's observations show that the action of atropine is associated with some dilatation of the heart however slight.

As before remarked, anginal attacks may be associated with either contraction or dilatation of the heart.   When a patient with anginal symptoms consults the writer, careful percussion of the heart is executed, and then the patient is instructed to exert himself (which act usually provokes frontier symptoms); one may thus ascertain whether the attacks are associated with or without dilatation of the organ.   The writer is fully aware that in very rare instances, cardiac failure may be associated with a heart that is even smaller than normal.   However, vast experience has taught him that the only trustworthy test of cardiac efficiency is to subject the organ to strain (exercise) and, if percussion shows that the heart dilates, it is inefficient; if, on the contrary, it diminishes in size, its tonicity is good.

Thyroid Heart.—The physiologic tonus of the vagus is said to be dependent on the thyroid secretion.   In diminution of the latter (hypothyroidism), symptoms of cardiac weakness are present.   Disturbances due to hyperthyroidism are more common.

In hypothyroidism the use of thyroid extract by ameliorating the condition is diagnostic.

In hyperthyroidism (Basedow's disease), antithyroidin or the antiserum of Beebe, may improve the condition.

It is well to know that the cardiac signs of the latter condition are accentuated by ten five grain doses of a reliable thyroid preparation.   Iodothyrine or iodine will act in the same way and intolerance to iodine is an early sign of hyperthyroidism.

A biochemic evidence of the latter is the antagonism existing between thyroid extract and adrenalin in the pupillo-dilator action of the latter on the eye of the frog.   In the norm, adrenalin does not dilate the pupil but this occurs after extirpation of the pancreas, in pancreatic insufficiency, diabetes and Basedow's disease.   The foregoing susceptibility is most probably caused by hyperthyroidism.

Cardiac Neuroses.—Any neurosis embraces the entire field of

pathology and this applies in all cogency to the heart. "The physical heart is the counterpart of a moral heart." Rest and a few doses of morphine are capable of altering completely the picture of a cardiac disease. One may physiologically block a host of reflex cardiac anomalies by an adequate dose of atropine. Thus, a case of angina pectoris vasomotoria may be cited with the following signs: heart symptoms, chest pressure and fear ensuing from exposure to cold. Here, the peripheral vasoconstriction due to cold by increasing blood pressure stimulates the depressor nerve, which in turn by acting on the vagus causes cardiac signs. By paralyzing this physiologic chain with atropine, the hands may be dipped into ice-water without subsequent symptoms but the latter reappear after the effects of atropine have evanesced.[7]

There are a large number of gastric troubles which may provoke anginal and other symptoms suggestive of some cardiac anomaly. The clinical investigations of the writer show that, after a hypodermatic injection of atropine, the stomach reflexes (of Abrams) can no longer be elicited. In other words, atropine paralyzes the motor endings of the vagus in the stomach. It will be evident to the reader, that atropine may be thus utilized in excluding any augmented irritability (hyperkinesis of the vagus). Thus the motor neuroses of the stomach (supermotility, peristaltic unrest, gastric crises, spasm of the cardia and pylorus, etc.) must yield to an adequate dose of atropine. Even the pain of a gastric ulcer may simulate angina and the diagnostic test is orthoform. If eight grains of the latter is given in one ounce of hot water, it will arrest the pains of an ulcer. After this manner, the latter may be differentiated from gallstones and many gastric neuroses which are uninfluenced by orthoform.

Cardiac Murmurs.—Cardiomuscular murmurs dependent on the delirious condition of the organ disappear after the use of digitalis. The latter drug also causes the disappearance of the murmurs of a relative valvular insufficiency.

The loudness of a murmur is largely dependent on the activity of the heart. Faint murmurs may often be converted into loud ones by increasing cardiac activity and the latter may be attained by digitalis.

Anemic cardiac murmurs disappear after the use of an appropriate chalybeate but it must completely disappear before we are

justified in concluding that it is hemic, insomuch as anemia may coexist with an organic murmur.

No fallacy in medicine has been more faithfully nurtured than the belief that a cardiac murmur is always indicative of heart disease.

The writer has frequently found in cases of enteroptosis a systolic aortic murmur which disappears during the time the abdomen is lifted by an assistant. The condition present is a low heart (bathy-cardia) which exerts traction on the aorta.

Many other instances of accidental murmurs and their diagnosis may be cited but this subject is reserved for a future contribution.

REFERENCES

1. Abrams.—Diagnostic-Therapeutics, Rebman Company, 1910.
2. This reflex is discussed in detail in Spondylotherapy by Abrams, Philopolis Press, San Francisco, 1910.
3. Zulawski.—Deutsche med. Wochenschr., March 31, 1910.
4. Merklen and Heitz.—Examen et Séméiotique du Coeur.
5. Abrams.—Medical Record, Dec. 14, 1907.
6. Falk and Tedesko.—Wiener klin. Wochenschr. XXII, 954, 1909.
7. Loewi.—Wiener klin. Wochenschr. XXIII, 274, 1910.

THE NEW FUNCTIONAL PSYCHIATRY

By WILLIAM A. WHITE

Medical Superintendent, Government Hospital for the Insane

Washington, D. C.

The conceptions of Kraepelin have dominated the psychiatric field for many years. These conceptions are of the same nature as those that prompt the biologist to schemes of classification. Fundamentally they are much broader than mere attempts to form groups of mental cases particularly as they enunciated a new principle in psychiatry. In the old days, cases were classified upon the basis of a cross section of their symptoms into excited, depressed, demented, etc. Kraepelin insisted upon the superficiality of this scheme and put forth the idea that no adequate comprehension of a psychosis could be gained without a full account of its entire life history, par-

ticularly as to its course and outcome. His studies based upon this principle of securing a longitudinal reaction of the psychosis are notable for having given us two great groups: the group in which the course shows several attacks of certain kinds of excitements and depressions with no tendency to deterioration—manic-depressive psychosis;—and the group that through all sorts of irregularities tends always to dementia,—dementia præcox.

The Kraepelin conceptions were a great step in the advance of psychiatry, and as a result of them not only has a considerable advance been made in our knowledge of the psychoses, but there has been a helpful change of viewpoint and a broader understanding generally of the nature of mental disorders.

The keynote of what I have termed by my title, the new functional psychiatry, is its distinctly individualistic trend—its emphasis of the importance of individual psychology. I do not mean to say that this importance has been altogether overlooked by the Kraepelin school. They have distinctly appreciated the importance particularly of the study of character, the defining of the make-up of the person who becomes insane. In this field they have done valuable work. The new movement, however, goes so much farther, emphasizes so much more the necessity of the analysis of the symptoms in the individual case that in spite of the work of the Kraepelin school in this direction, I think it proper to designate individual psychology as the characteristic of the new movement in contrast to the life history conception underlying the Kraepelinian.

The fundamental conception of this new individualistic viewpoint is that every psychic fact must have been preceded by an efficient psychic cause. Ideas, or better, mental states, do not arise de novo. They must be the outcome always of other mental states from which they necessarily issue. This is so throughout the field of psychopathology. Even in the realm of the so-called organic; the psychoses associated with well defined brain changes. That an alcoholic should have delirium may well be dependent upon a toxemia, but whether he sees in his delirium snakes or monkeys, visions of his office, or of hell must depend upon purely psychic causes, upon the pre-existing psychic material which has become involved in the disorder. Whether a paretic is exalted or depressed, whether the exaltation is largely erotic or expresses itself by delusions of great

wealth must find its explanation in the mental make-up of the person afflicted, and the character of his psychic trends. The cards may be indefinitely shuffled or arranged in any way, but there are only fifty-two of them, and the result, whatever it may be, is conditioned and delimited by that fact. This illustration should not, of course, be taken too literally because new psychic facts, new material, new cards are added during the course of the psychosis. The fact intended to be emphasized is that the disease process can only deal with the material it finds at hand or which is furnished it, and which it does not itself create.

With this fundamental conception the psychiatrist is in a position to remind us of the chemist or the astronomer. If there is a hiatus in the logical connections of the different steps in a psychosis, like the chemist he can with confidence look for an element to fill the space. If there is a disturbance somewhere along the line he may expect, like the astronomer, to find a hitherto unknown source of energy to account for it.

I have been in the habit of speaking of mind as an adaptive mechanism. I have used this term to emphasize, not so much the function of adaptation as the conception of mechanism. The term adaptive mechanism may with equal propriety be applied to any organ or to any function. The particular characteristic of the mind in the exercise of its function of adaptation is that its efforts are addressed primarily to the individual as a whole and not to any of its various parts. While the heart, stomach, kidneys, and other organs have adaptive functions, they are limited to relatively narrow fields; the mind, however, operates to relate the individual, as a biological unit, to its milieu—more particularly its social milieu.

While a passive tendency to adaptation is present in all the internal organs, the mind tends in addition to shape the environment to fit a plan within—to be actively adaptive. It is on the plane of the effort to adapt not only passively but actively by endeavoring to shape the circumstances to fit inner needs that the psychoses arise as an expression of failure, more or less complete, to bring the individual into harmonious and efficient relation with his environment.

This viewpoint gives us an entirely different attitude toward the psychoses. While we look upon the psychosis from this point of view as representing a broken compensation, an inability to reach

an adjustment of conflicting needs, we at the same time feel that an
adequate analysis of the symptoms ought to enable us to reconstruct
the psychosis, step by step, along lines of logical and necessary se-
quence. Let us see if we cannot apply these ideas to an understand-
ing of some cases.

I. *Young man, clerk, had a neurastheniform attack when seventeen, at
twenty-four breaks down again under conditions of hard work, and per-
sonally irritating conditions. The symptoms of this attack are again
neurastheniform, but in addition a paranoid trend develops founded upon
the conditions in the office. Recovery followed removal from irritating
conditions.*

Case No. 17516, male, aet. 24 years, married; paternal grandmother and
maternal great-grandmother became insane in the senium. Of a high strung,
nervous temperament. High school and partial college education. Enlisted
in the Navy in 1903; has a good record; advanced from the position of
landsman for yeoman at $16.00 per month to chief yeoman at $74.00 per
month during his time of service of a little less than five years. Temperate
in habits. In the spring of 1903, following a period of excessive mental
work with insufficient recreation, he had an attack characterized by lack
of stamina, a tendency to be morose, taciturnity, marked sexual debility, lack
of interest in studies or work, extreme nervous tension, and an all-consuming
desire to be with his mother. *Recovery in three months, after a rest and
removal of the cause.* In June, 1908, a second attack, presumably induced
by overwork, worry and anxiety with practically the same symptoms as in
the first attack, but combined with a suicidal idea and a feeling, which is
probably not altogether delusional, that he was imposed upon.

The history of this second attack and the mental state of the patient
after admission to the hospital is as follows: Since admission patient has
shown no subjective symptoms indicative of an abnormal mentality. He
has been correct in his bearing toward the physicians and others. Has been
congenial and agreeable with all with whom he has been brought in contact.
A few days after admission he wrote the comprehensive history which forms
a part of his case record, having been given simply a few verbal suggestions
as to what was desired. He has done in a perfectly satisfactory manner
clerical work for the physician, such as writing physical examinations,
taking dictation, etc. He writes regularly to his wife, his letters containing
an excellent account of his life here, with very graphic descriptions of his
surroundings. There is nothing suggestive of an abnormal mentality in
these letters. He feels at the present time that he is fully competent to
carry on his work, does not have any feeling of inability. He states that
the physician at the Toledo State Hospital told him he had recovered his
normal mental health, and he cannot quite explain the action of the Naval
Surgeon who advised his transfer here. He thinks, however, it might

possibly be the result of certain statements made against the first executive officer of the battleship whose clerk he was. He frankly discusses his relationship with this officer, and thinks he might have been injudicious in criticizing a superior officer to the Naval Surgeon. He maintains, however, that he was not treated fairly by the officer in question, and thinks the worry incident to his troubles with this officer precipitated his last attack. It appears that the clerk who was assisting him in the office was a man of twelve years' experience as a clerk in the service, and was in every way better qualified for the position which the patient held than the patient himself. This assistant had been discharged from the Navy for drunkenness and it was on this account that he was not made a chief yeoman. Prior to the patient's service on the battleship he had a record of 100% in sobriety and obedience, and his rating otherwise lacked .05% of being perfect (that is, his rating was 4.95%, 5% being considered perfect). He had made arrangements to serve as chief yeoman with the former officer with whom he had had service, but the arrangement was not carried out, and he found himself under the Commandant X. From the very first he did not get along well with him. The officer was very irritable, was continually finding fault with his work, and although he worked late into the night, he was not able to satisfy the superior officer. He admits that certain features of his work were not satisfactory, inasmuch as he had not had experience, and the junior clerk was more adept at the work; but he had been kept back on account of his previous record. The executive officer had never intimated to him that he desired to replace him by his junior clerk, nor that he wished to disrate him, but the patient is of the opinion that he wished to promote the junior clerk to his place, and that this may have accounted in a way for the officer's attitude toward him. At the end of a quarter on the battleship he was only given 70% in proficiency, which is below the standard required by a chief yeoman. He thought this rating was unjust and unwarranted. He offers other evidence against the executive officer which appears quite reasonable; says that another chief yeoman was twice laid off with a nervous attack on account of the way he was treated by the executive officer. Many others on the ship had complained of the disagreeable manner of the officer. In the early part of June of the present year he began to worry because he thought he was not proving satisfactory. He lost weight; his appetite failed him; he was unable to sleep well; felt nervous; frequently had to get up and pace up and down the deck in order to quiet his nerves. He then became depressed. These symptoms were all very marked about the first of July and had increased in severity up to that time. Early in July he had vague ideas of suicide; his idea was that if he was compelled to suffer the conditions under which he was working, that death would be preferable to existence. He became so nervous and fidgety he was unable to remain seated for more than a few minutes at a time; he felt tired all the time; was not refreshed by his sleep. As he expresses it, "I felt as if I had been on a debauch all the time." He had no false

perceptions; no abnormal somatic sensations, except a feeling of debility, and felt sure that at this time he had full possession of his faculties. Although he thought of suicide, he never made the attempt. He had reached the stage, however, where he had decided that if he was going to commit suicide, it would be by drowning. The fact that he was married and the disgrace to his family consequent upon such an act was sufficient restraining influence. He believes his ability to reach this conclusion was evidence of his sanity. On the 12th of July he had a night leave and went to visit his wife, who was at Norfolk. He was exceedingly nervous that night, was unable to sleep at all, paced back and forth, and his condition he said alarmed his wife. He started back for the ship, but before he had gone far he made up his mind he could not go back and stand the conditions any longer, and he consequently returned to his home in Ohio. His status with the Department is explained in his history. He was at home from the 15th of July to the first of August, when he was committed to the Toledo State Hospital. Shortly after he arrived home he made application to go back to the ship where he would be with his former officer, but did not receive a reply until the 27th of July. Up to that time he thinks he was somewhat improved, being buoyed up by the hope that his request would be granted, but all the time he was very restless, depressed, anxious, and felt much run down. The family physician diagnosed his condition as nervous exhaustion. The day before he was sent to the Toledo State Hospital he started away from home with the vague idea that he would strike a job somewhere where his friends would not find him. After going about 18 miles from home he decided to return and was thoroughly exhausted. After he was committed to the Toledo Hospital he felt better; he realized that he would not be returned to the battleship and that fact was sufficient to cause him to cease worrying on that score, and he dates his improvement from that time. He gained fifteen pounds in weight while at Toledo. Was given his parole soon after admission. The report of his first attack is contained in his history, and from the records of the Toledo State Hospital. He says he is naturally of a sunny, optimistic disposition, fond of outdoor life, jovial, is not inclined to worry without sufficient justification, but he considers himself of a high strung, nervous temperament.

Here we have a case of a young man subjected to stresses distinctly mental in character develop a degree of irritability and neurasthenia under their constant influence, even thinking of suicide, and finally when temporarily on leave from his duties, being stampeded and finding himself unable to return to them. As soon as he found himself away from the irritating conditions he immediately began to improve.

There are certain features in this case that would suggest a manic-depressive psychosis, especially the history of a previous attack and

the fact that at the time of his recovery he presented an unusual self-laudatory and egoistical, self-satisfied attitude and no longer referred to any of his previous hypochondriacal ideas. Whatever decision might be reached, however, as to the name to apply to this disease, the important feature is to recognize the psychogenic origin of the breakdown and have an understanding of the sequence of events in the case. Such a recognition and understanding is far more valuable from the standpoint of treatment and prevention of further mishaps, than can be the formal pigeon-holing of the psychosis under the name of some recognized type.

II. *A fairly successful business man loses his efficiency with the development of arteriosclerosis. Develops compensatory ideas of great ability, becomes suspicious under irritating conditions, his paranoid trend becomes aggravated and he fails to adjust completely under the disintegrating effects of alcohol. Removal from surroundings and from alcohol results in recovery without full insight.*

Case No. 18175, male, aet. 64 years, single. History of birth is unknown. Mother never needed assistance of physicians at childbirth. Patient never had the diseases of childhood; he was breast fed; does not know at what age he began to walk or talk. He entered school when quite young, graduated from a boarding school in New York. They always stated at school that he was pretty bright; he graduated from the boarding school at the age of 17, and from that time until the age of 21 he had no definite occupation. He then enlisted in the Northern Navy of the Civil War and remained for five years, until its close. He attained the rank of master's mate; believes that it is equal to lieutenant in the army. He also had a recommendation from an admiral and claims he would have attained the rank of ensign had the war lasted a month longer. After that he entered into real estate business in the city of New York; was engaged in that for about 18 years; had the usual ups and downs of a business man; was worth at one time about $65,000.00, and when he retired from business a few years ago, he had a few thousand dollars. He lived with his sister on his income, went to Europe once or twice, and entered a National Soldiers' Home about three years ago. He does not remember the date. He remained there about one and one-half years, but did not like the place because of his associates, and left for Washington, D. C. Here he applied for a position in the Navy Yard, and after waiting for some time for same, he entered, upon the advice of a friend, the Naval Home at Philadelphia. He was not entitled to the privileges of that Home, as only those who have spent twenty years in the Naval Service are admitted there, but they waived that rule in his case, on account of his behavior during the war. He was never married. He indulged in alcoholics excessively in the war, and moderately

but constantly since then. He smokes moderately. He had gonorrhea when about 17 years of age; denies any syphilitic history. While young he had felons on about five of his fingers; cause unknown. About two years ago while in New York he had a paralytic stroke. In describing this he says a cramp started in the left leg, ran up on his thigh, left side of the body, almost involving the heart. Then he became unconscious and remained in this condition for about ten hours. He recovered consciousness in a week's time and was able to walk around. His left side feels different now from the right. He says it is colder than the right and has a tingling sensation. In March, 1909, he entered the Naval Home in Philadelphia. He was obliged to go there on account of being unable to obtain work. At that place he was employed as clerk in the governor's office for about three months. He does not remember the exact date, but about six weeks ago he left that occupation on account of an altercation with the chief clerk. Previous to working in the governor's office he was employed in the library, from which he was promoted. A day or two after leaving the position in the governor's office an inmate named O—, whose room was next to his, commenced pounding on the wall adjoining his room and abused him by calling him all sorts of obscene names. Having had some alcohol that morning he became very much aggravated by the insults heaped upon him by his next door neighbor and commenced to retaliate in kind, where-upon O— entered his room and struck him on the head with an axe, so he was told afterwards, producing a wound in the scalp which required several stitches, and which knocked him senseless. He was taken to the hospital, where he remained until recovered. A few days after this occurrence he obtained three months' furlough to go to New York, where he expected to receive the money for the settlement of a certain estate. Not being able to obtain any money he returned to the Naval Home after an absence of about twenty days; upon his return this same O— commenced insulting him again, whereupon he struck him on the head with a cane. This was in December. He was then put into solitary confinement for thirty days, at the expiration of which time he was sent here. Patient answers questions coherently and readily, although he cannot remember dates very well.

The patient's explanation of this attitude of his associates towards him is that he excited the envy of the other inmates of the Home because he secured such a good position as that of clerk in the governor's office, particularly when he had not been twenty years in the service, and he was not therefore, because of this fact, entitled to the privileges of the Home.

The medical certificate from the Naval Home states as follows: Since his admission to the Naval Home he has been constantly in trouble. He has been unable to get along with his superiors, and has imagined that the other inmates of the Home tried to impose upon him because of the fact that he had been an officer of the Navy (master's mate). He has a very much exalted idea of his own position and attainments. On September 2d

he had altercation with S— O—, during which he was struck by the latter on the top of the head with a cane. He has stated in a number of letters to the governor and executive officer that O— had abused him and tried to keep him awake by knocking on the partition between his room and O—'s. There is no evidence to substantiate this statement. On the evening of September 30th he walked up behind a chair in which O— was seated and struck him over the head with a black-jack, which he carried concealed in his hand. The fact that the black-jack struck the back of the chair probably prevented very serious injury to O—. Following this assault he declared that he would kill O— or O— would kill him. From the foregoing the board is of the opinion that it would not be safe to allow this man to remain an inmate of the Naval Home, or to discharge him therefrom, as he would possibly be a menace to the public safety.

This is distinctly a case that would ordinarily be classified as an organic case, and very properly so. The particular character of the manifestations, however, we see again, are determined by distinctly psychogenic factors.

Having been a successful business man he gradually loses his efficiency as the result of cerebral arteriosclerosis. Exalted ideas of his ability develop as the result of a compensatory mechanism. Ideas of suspicion, with a distinct paranoid trend, result from irritating conditions in the office where he worked at the Home, as in the preceding case. After removal from the irritating conditions the effect subsides and the patient makes a recovery from the distinct psychotic manifestations, without, however, a full insight into what his condition had been. This lack of insight probably has its basis in the organic changes. The man no longer is pliable, or capable of adjustment except within narrow bounds. The remedy for the conflicts therefore must be the removal of the patient from the conditions of stress.

III. *A single woman of education and considerable ability breaks down in middle life. She develops a complex, loosely organized, sexually compensatory, wish-fulfilling delusional system. Adjustment to reality, however, fails with resulting dilapidation of thought.*

Case No. 17901, female, aet. 38 years. The patient gives the following history: Born in Ohio, 38 years ago. When four years of age her father struck her with an iron ramrod of a gun across the back. She says that he dislocated her kidneys and various other organs. She was unconscious for some time. She said her father attempted to take poison and to commit suicide and she interfered with him. His sanity was inquired into at the time and his confinement in a State institution was under consideration.

He was never sent there, however. He entertained a delusion that the patient was not his own child.

Patient suffered from dysentery on several occasions when a child, and claimed that she always had trouble with her spine after the blow above described. Had pneumonia at fourteen. Attended school from seven to eighteen years and graduated from high school at that age. Attended college in Ohio for four years and received an A.B. degree. She taught school in her home town for about two years, when she secured a position as newspaper correspondent. She went to Utah on a visit and while there secured a position with one of the papers, which she held for six months. She then went to California, where she remained for two years and was correspondent for a newspaper in that State. She went back home and was employed by a home paper until the fall of 1899. She then went to another Ohio city and worked as proof reader on two of the papers there. In 1907 she went to New York in order to be near her sister, and worked there as a proof reader. In September, 1907, she went on a vacation, which she decided to spend in Ohio. She was taken ill on the train and claims that she fell and fractured her skull. When she got to East St. Louis, they took her off the train, put her into a coach and took her to the residence of Dr. I——, with whom she was acquainted. *She says she went to sleep in his house and when she awoke, she was suffering from two large wounds in the abdomen. There are no scars of these wounds.* She then went to a sanitarium in Ohio. She remained there a week and left to go to relatives in her home town. Later she returned to New York and lived with her sister. During all this time she was suffering from physical inability. She says she finally telephoned to the Commissioner of Police, as she had been placed in his care. He directed that she be taken to the psychopathic ward at B——. She was there two days and claims that when Dr. V—— heard of her being there he telegraphed to have her sent to a State Hospital as his guest. She remained there from October, 1907, to April, 1909, when they pronounced her recovered and told her she could go to work. She then came to Washington and lived with her mother. For the last few days she has not felt well and she asked one of the Washington doctors to send her somewhere for a few days' rest. He took her to the police station, and later she was sent here. She states that while she was in the New York Hospital she was in one of the nicest wards, but she did not have parole. She states that she has never had suicidal ideas. She says that she has now two long cuts in the vagina.

The following is additional information received from the patient's mother: She had a good position in New York as a proof reader. One morning in September, 1907, she seemed nervous and excited. She went to the office as usual, but did not return in the evening. Later the mother discovered that she took a train to Ohio. She was taken ill on the train and was removed to a sanitarium. *She told the conductor that she had had a hemorrhage, but there was no sign of any, and when she reached the*

sanitarium she was examined and nothing abnormal was found. They telegraphed for her mother, and when she arrived she found her delirious. She imagined she was terribly ill, and refused to get out of bed. After about a week she became quieter, and was persuaded to accompany her mother to their home. Later they both returned to New York. After reaching New York she became more nervous, screamed, talked irrationally, and at one time assaulted her mother. She was taken to the psychopathic ward at B—— and from there was transferred to a State Hospital. In April, 1908, she was allowed to leave the institution in the care of her mother. She considered her very much improved and thought she could take a position. The physician told the mother that she had not recovered, and would need careful supervision. They came to Washington and took an apartment. She has entertained delusions of a somatic nature, but aside from this, appeared normal. She did fancy work, sewing, did errands, etc. The day before her admission here she became nervous, talked loudly, and insisted on walking the streets all the time. She has never had any suicidal tendencies, and with the exception of the attack on her mother above mentioned, has never been violent. Before the onset of her psychosis she was considered very bright. She was kind, thoughtful, and always pleasant.

The following mental history was furnished us by a New York Hospital where she had previously been a patient: On admission she was summed up as hypochondriacal, talking at length about her heart trouble, her attacks of syncope, *hemorrhages from the vagina,* difficulty with diet, claimed she had a hernia which was constantly in danger of becoming strangulated. *The hemorrhage, she stated, was due to an assault while she slept either by a man or a sharp instrument.* She claimed that in her business she had made many enemies and thought some of them might have done this. She spoke slowly, in a monotonous, indifferent tone, apparently taking some pleasure in discussing her complaints, boasts of her former physical strength, attainments and character of positions formerly held. Her memory showed no defect, and orientation was practically correct; insight entirely lacking. For some time after admission she continued inactive, sitting by herself and having little to say to any one, even when interviewed; complained greatly of her ill health and physical weakness. She showed some mannerisms and was haughty in her bearing; for awhile she was untidy in dress and personal appearance.

In December she began to have noisy assaultive outbreaks—in a loud voice demanding that her husband be summoned and her release secured. When visited in January by her mother, she struck her. For three or four months after this she continued to be restless, irritable, and at times assaultive; *constantly claimed to be married to a Mr. A——.* In July she wrote a long letter giving in detail the story of her travels preceding admission, with an account of hemorrhages and a supposed operation. This letter showed the presence of extensive, absurd persecutory delusional complex practically without system. *She claimed to have been the victim of a criminal operation performed by Dr. I——.* Throughout the rest of her travels, her return to

New York, her residence in B——; etc., she claimed to have constantly run across members of the I——family—evidently mistakes in identification. From that time she showed a gradual but continuous improvement in her conduct in that she was tractable, fairly appreciative of attention shown, and showed almost no reaction to her false ideas. They, however, did not change and she impressed us as beginning to show a mental deterioration.

'We believed her to be harmless, and her mother desiring to care for her in her home in Washington, she was on April 5, 1909, discharged in the care of her mother, with a· diagnosis of paranoiac dementia praecox, unimproved.

Just previous to her discharge from this hospital it is noted that she says she was betrothed to a Hebrew before she was born, and that at the age of twenty she broke this engagement. When she was three years of age a Catholic priest requested that one of her offspring be given to that church for a clergyman. The Hebrew family into which she was to marry consented to this agreement.

Here we have a young woman who was evidently well endowed intellectually and for many years did excellent and rather high grade literary work. From the pronounced sexual trend of her delusions we may reasonably assume that her mental break-down was largely achieved by failure of the fulfilment of these functions. The characteristics of the delusional system indicate that she must have given much thought to sexual matters. The delusions are compensatory in character and plainly wish-fulfilling. Wishing for a child she becomes impregnated. Being a virtuous woman this has to be accounted for, and she therefore displays a delusion that she is married to a Mr. A———. Inasmuch as no child appears upon the scene, a delusion that she has had an abortion performed accounts for its absence, and inasmuch as this is a criminal operation it is performed without her knowledge while she sleeps.

Here we see an evident attempt to compensate for certain deficiencies in the life of the patient. The delusions as outlined above are compensatory ideas. They are mixed up, however, in a rather hopeless way with other delusions, mainly of a somatopsychic character, such as dislocations of the various viscera, numerous hemorrhages from the vagina, fractured skull, etc. The delusional system is loosely organized and from time to time we see noisy, assaultive outbreaks, with restlessness and irritability. The effort at compensation has not been successful and there results a progressive dilapidation of coherence in the stream of thought of a præcox type.

IV. *An unmarried woman breaks down at the menopause with self-accusatory and nihilistic ideas. After several years of profound depression arrives at a compromise state marked by development of a keen sense of humor with a facetious type of reaction.*

Case No. 16565, female, æt. 50 years, unmarried. We find noted in this case during her early stay that she continues to be depressed; says she is very unworthy and that she should be hung; that she has committed the unpardonable sin and should burn forever in the flames of hell. She appears however, to be quite interested in the other patients but remains by herself. A little later we find a note saying that she talks about her great unworthiness, that she has committed the unpardonable sin and that her soul is lost. She is noted as being indifferent to her surroundings, saying that she is dead, that what exists of her now is her spirit, but that her body has passed away from her; says that because she is dead it is useless to attempt suicide.

One sister of patient was insane. Paternal grandfather died of tuberculosis. Patient was a delicate child and has always been subject to attacks of mild depression. Her life was uneventful until 1904, when she suffered from spinal and hip-joint disease. In 1905 she was operated upon for this at a hospital in Washington City, where she remained two months. Following this operation she was in poor physical health, and became mentally depressed. She grieved over transgressions committed in her youth, said her soul was lost, and that she was going to hell. She then improved and for some time appeared in her normal mental condition until she overworked and became physically exhausted. Then one morning her delusions suddenly returned. She wept constantly, complained of pain in her back, and said God was punishing her for the sins of her youth. An osteopath was consulted who said there was sufficient spinal irritation to account for her nervous derangement. After six weeks of osteopathic treatment, Dr. T—— of Virginia, a psychiatrist was called, who stated that the patient was suffering from melancholia, due to degeneracy of premature old age. In January, 1907, she attempted suicide by drinking laudanum. She was then sent to a State hospital in Virginia, where she remained from January 11th to May 1st, 1907. On May 16th she was admitted to this hospital.

Medical certificate stated that the patient considered herself a moral outcast, and had suicidal and homicidal tendencies. Physical examination on admission was negative. Mental examination showed that she was emotionally depressed, and had delusions of self-accusation and unworthiness; consciousness was clear; apprehension and comprehension were good; memory and orientation were normal; she was neat in habits and appearance. The notes from the time of admission to the present show a gradual mental deterioration. For many months she entertained ideas of suicide. She had the fixed delusion that she had committed the unpardonable sin; that she was dead; auditory hallucinations developed; memory became defective. At the present time she is indifferent to her surroundings, helps with the work, and when not so employed, sits and talks to herself. She has auditory and visual

hallucinations, sees spirits and hears them talking to her. She has many delusions, is oriented to place and person, but does not know the year, month, or day. Her memory is defective in all respects. Patient has partial insight, and for two years past she has not shown any suicidal tendencies. She has a well marked arcus senilis.

This patient gave the general impression on her admission to the hospital of a case of involution melancholia. A further inquiry into her history, however, developed numerous previous attacks of depression which suggests a manic-depressive reaction type. Just before she was discharged from the hospital, however, we learned that in her early life, before she was twenty, she had a love affair. This love affair was a very profound emotional experience, particularly as she found it necessary to give the young man up because of his drinking habits. That this was not done willingly, however, was shown by her subsequent life which was taken up with constant activities, largely of a social nature. She was an attractive young woman and had many admirers but did not permit herself to become attached to any one of them. She led a very active life and was able to sublimate the energy of her suppressed emotions until the period of the menopause, when she broke down with self-accusatory delusions and suicidal tendencies. She believed that she had committed the unpardonable sin; this sin was having committed adultery in her mind with a young man with whom she had been in love in her youth. After upwards of five years of conflict she finally succeeded in reaching a compromise by developing tendencies diametrically opposed to her delusional system. She becomes talkative, humorous, and particularly facetious. We find her just previous to being discharged saying that she was born dead, but making this statement with a smile, and making the comment that she has gotten along pretty well all her life for a dead person. This condition of relative equilibrium enabled her to go back to her people, and in the absence of disturbing factors, she is liable to get along indefinitely outside of a hospital. The compensation has been fairly efficient.

V. *A psychosis dependent upon absolute failure to adjust to certain highly emotional conditions resulting in broken compensation and the growth of an autopsychic delusional system with ideas of separation of soul and body. Combined with this, a compensatory defense psychosis with somatopsychic delusions and feeling of unreality.*

Case No. 16990, female, æt. 39 years, married. Paternal grandfather is

said to have died of softening of the brain. Her mother was a patient in this hospital for seventeen months; her case was diagnosed as a simple depression in a psychopathic individual. She was discharged recovered.

The main facts in this patient's history are as follows: From fifteen to twenty years of age she was in love with a young man, a schoolmate of hers. This love was reciprocated. They were very fond of each other, and she spoke of him as her "soul mate." After this situation had been going on for some time, the young man went away to college. He and she corresponded, or were to have corresponded, at frequent intervals. The mother, who was opposed to the match with this young man, intercepted the letters of both, and led her daughter to believe that the young man had grown tired of her and jilted her. Before he returned from college she was taken away from her home city to another place. In the mean time another man who had for some time been attentive to her, and who received the sanction of the mother, renewed his attentions and proposed marriage to her. At the expiration of four years she finally consented to marry him, although at the time she realized she did not love him. Immediately following the marriage she realized that she had made a mistake. From the day of her marriage to the present time she has regretted her action and her husband has been a constant source of irritation to her. She finally discovered what her mother's action had been in separating her from her early lover, and then of course her regret became very poignant.

As the result of this union two children were born. During both of the pregnancies, however, she was very ill, especially during the first, and accumulated therefore additional reasons for disliking her husband and regretting her marriage. The whole situation, by constant brooding and inability to get away from it, became more and more hateful. She plunged into social life to the extreme and engaged in social functions almost constantly. In this way she succeeded in sublimating her repressed emotions to some extent. The children of this union, because they were his children, bore some of the brunt of her feelings for her husband in her lack of affection for them. Her illness in her two pregnancies had been so serious that she resorted to the usual ordinary means of preventing impregnation. Being an inherently good and somewhat religious woman this was repugnant to her and she began to think of her acts in this particular as sinful. The whole situation culminated in what the history states to be an attempt upon her husband's life, but what she claims to have been a suicidal attempt. As a result of this occurrence she was taken to an institution.

While in a private sanitarium, not long after the above occurrence, she had a prolonged and severe hemorrhage from the nose, probably vicarious menstruation. The blood came from the nose and mouth in clots for a number of days, and this, associated with a peculiar feeling in her head, led to the development of the delusion that her brains had come out at this time.

At the time of her admission to this hospital she still had the belief that she had no brains, that her skull was empty, that her body was all dried up, that if her finger were cut no blood would flow, that although her heart

beat it beat in a dead body, that she had no feeling and that her soul had left her. She would speak of her soul as being "up there," looking up towards the ceiling, and saying that she was dead and that it was the soul outside of her that was directing her replies to questions. At one period of her residence here a sensory examination disclosed a universal analgesia. Psychoanalysis disclosed a wonderfully rich subconscious flow of ideas. The salient features of the analysis, however, are as follows: She still believes in her own mind that she belongs, mentally, to her first lover and her dream life was rich in symbolic expression of her wish to be with him. Her body by the terms of the marriage contract belonged to her husband. The conflict between this state of affairs she was incapable of adjusting, and the result was a split in her personality, her soul and body separating, the former being brought into relationship with her first lover, more particularly through the mechanism of symbolic wish-fulfilling dreams, while the body remained with her husband. Sexual relations with her husband were repugnant and disgusting to her and she believed that because of her attachment to her first lover that they were sinful. There develops, therefore, in connection with the body a feeling of unreality amounting to the delusion that she is dead. If the body be dead it justifies a relationship which otherwise could not be tolerated. The material for the delusion of death was found in her early life, reaching away back to the period of her infancy. During that time therefore she had numerous and various experiences with death, many of them of a highly dramatic nature. This large death experience was, so to speak, lying loose in her subconsciousness ready to be attached and utilized by the psychosis.

In this case we have a condition that cannot be adjusted to, namely, her love for one man and her marriage to another. As a result of her inability to adjust, the personality splits. A certain amount, however, of compensation takes place in the dream life by a complex, symbolic, wish-fulfilling possession of her lover. With respect to the somatic ideas also a certain compensation takes place which, however, remains a part of the psychosis and consists of the nihilistic ideas.

The last case is one with which I did a considerable amount of psychoanalysis and is only presented here in the briefest possible form. The other cases are taken from the case records. They are average cases such as might be found in any large hospital for the insane. No especial effort has been made with any of these to analyze the symptoms or explain them. I have merely brought them forth as average records and tried to show how they might be viewed from the vantage ground of what I have termed the new functional psychiatry. It is a very different story from only a few years ago

when every case was forced under one of a half dozen nosographic captions.

Very little effort has been made to diagnose the cases in the ordinary meaning of that term. Case I might perhaps be classed with the acute paranoias of Friedmann with endogenous delusional formation. Case II would have to be classed as arteriosclerotic dementia, but the element of dementia is not at all apparent on the surface and only comes out under trials of efficiency. Case III would quite plainly be classed under the rubric of dementia præcox. Case IV was plainly an involution melancholia on admission. The history of numerous previous depressions, however, makes one think of manic-depressive. To my mind these depressions were the expression of the ascendency of her complex. They occurred at times when for some reason or other she was less able to repress. Later on, at the period of the menopause, when physical depression became relatively permanent, the depression assumed the ascendency, and it was several years before anything like calm could be regained. It would be of the greatest interest to know just what is the mechanism of adjustment in such cases. Case V can hardly be diagnosed except by such a short description as I prefixed to it. The young woman is not at all deteriorated but keen, alert, and intelligent. The condition is essentially functional.

The important point emphasized by such a consideration as I have given these cases is that it is of relatively little importance to diagnose a given case if by diagnosis is only meant giving it a name. The important thing is to understand the condition, the mechanism of its growth. When we have done this, and only then, can we intelligently attack the problem of treatment, or if the patient recover, of the prevention of subsequent breakdowns.

Although no effort has been made to present well analyzed cases, it can readily be seen, I think, how illuminating is the consideration of a psychosis from the view-point that considers the mind as an adaptive mechanism and as adapting by endeavoring to shape the environment in accordance with a plan within (desire). From the failure of carrying out the desires comes lack of harmonious adjustment with an effort at compensation. This effort may result in any degree of success or in absolute failure. In accordance with the result is the picture of the psychosis.

ADVENTITIOUS MURMURS ACCOMPANYING THE FIRST HEART SOUND

BY A. L. BENEDICT

Consulting Physician, City Hospital; Attending Physician, Mercy Hospital
Buffalo

My attention has been called to this subject by two interesting articles by Dr. Myer Solis Cohen, one in the American Journal of the Medical Sciences, July, 1903, the other in the Pennsylvania Medical Journal, December, 1909, descriptive of various peculiar sounds, usually appropriately described as "crunching," heard in connection with the first heart sound at the apex, not transmitted like ordinary mitral systolic murmurs, not replacing the valvular click, and apparently not due to a valvular defect.

I cite the following case. The patient had Banti's disease with marked ascites. The apex beat was noted in the fourth interspace, just inside the nipple. The cardiac area, determined by auscultatory percussion and by my modification of that method using a tuning fork instead of percussion, extended to the second space and, while not abnormally large, was tilted upward to the left and downward to the right. There were no valvular murmurs but clear, though not very forcible, valvular clicks at all valves. There was a rather prolonged sound accompanying the first heart sound, to which Dr. Solis Cohen's designation of "crunching" applied nicely. My interpretation of the phenomenon was that the heart, crowded upward by the ascites and tilted so as to strike still more forcibly against the left lung, produced an audible current of air from the vesicles into the bronchial tubes, somewhat analogous to that obtained in percussing to elicit the crack-pot sound. The volume of air involved was, of course, not enough to produce an appreciable expiration, and it could not be made out that the crunching sound was increased either during expiration when the cardiac compression was unresisted, or during inspiration when we might suppose that the resisting air current would have intensified the sound. On the contrary, the inspiratory and expiratory breath sounds interfered with the clear perception of the cardiac crunch.—However, respiration, unless very gentle, also interferes with the crack-pot sound.

I have noted the same phenomenon in several other cases in which it might be supposed that the apex beat would have an unusually direct compressive action on the lung. Among these causes may be mentioned ballooning of the intestine or, particularly of the stomach, and unduly vigorous cardiac action, either with organic hypertrophy or due to functional causes. Cardiac displacement, adhesions tying down parts of the lung so as to offer special local resistance to the apex beat, small effusions, etc., might also be expected to give rise to the same phenomenon, but I do not remember to have actually demonstrated them in connection with it.

The question naturally arises whether some of the common statements regarding the development of functional mitral leakage under strain, may not depend upon the incorrect interpretation of this phenomenon. While I examine the heart as a matter of routine and, almost always, the lungs also, these organs are, so to speak, in the flat above the one that I occupy. It seems that the problem is worthy of close study by those devoting themselves more particularly to the acoustics of the thorax.

Another adventitious sound in connection with the apex beat is of fairly common occurrence. Whether this sound is the same as that mentioned by Dr. Solis Cohen, as not typically crunching, is difficult to say, without joint examination of the same cases. With the stomach distended, either spontaneously or artificially, especially when the contents are mainly gaseous, the cardiac impact is almost always appreciable. The stomach tube, with a funnel inserted, makes a very good monaural stethoscope and one can hear various interesting sounds, as of gastric contraction (manifested by the churning of the contents, scarcely the muscular movement itself), the effervescence of a bicarbonate if the contents are strongly acid (the same sound heard with the ordinary stethoscope after the patient has swallowed soda I reported some years ago as a rough test for gastric acidity), the effervescence produced with hydrogen peroxide, etc. The respiratory and cardiac sounds are usually audible to some degree through the stomach tube.

Aside from the detection of the cardiac impulse with the stomach tube in place, the first heart sound or its accompanying systolic murmur, is pretty regularly transmitted to some degree over the area of a distended stomach. In quite a number of cases I have been able to

map out the gastric area by auscultatory percussion, with the patient's own heart acting as an assistant to furnish the percussion. In some instances, there is purely a transmission of a heart sound, valve closure or murmur, as the case may be. In others, the apex beat either starts a wave in the liquid contents of the stomach, or seems directly to force a little air or liquid through the orifices, mainly the pylorus, or reflexly produces peristalsis which, in turn, may cause a sound in either of the ways just mentioned. Thus gastric sounds, corresponding to the heart beat, may be a mere thump, a crunch, swish or indescribable murmur.

THE IMPORTANCE OF THE NECK AND CHEST MUSCLES IN THE PRODUCTION OF THE PHENOMENA OBTAINED BY PERCUSSION AND AUSCULTATION OF THE CHEST

BY F. M. POTTENGER

Medical Director, Pottenger Sanatorium for Diseases of the Lungs and Throat

Monrovia, California

The manner in which the muscles influence the findings derived by percussion and auscultation of the chest has hitherto received but scant attention. The major portion of our knowledge on this important subject up to the present time can be summed up by saying that where the musculature is thick, percussion and auscultation are more difficult than where it is thin.

I shall attempt in a few words to show how necessary it is to study the musculature covering the chest carefully in order that we may be able to accurately interpret our findings on percussion and auscultation.

If one will systematically percuss over the lungs, beginning at the apex and, taking each intercostal space in turn, cover the surface from the shoulder and axilla to the sternum, he will find definite changes over certain areas, which show as a difference in resistance to the finger used as a pleximeter, and as a change in the percussion

note. While these changes may be detected in the normal chest, they are much plainer when the musculature has degenerated.

The first area to which I wish to call attention is about the middle of the first interspace. Here a lessened resistance to the pleximeter finger and an increased resonance are usually noted. This represents the area between the clavicular portion of the deltoid and pectoral muscles. The lessened resistance and increased resonance are due to the fact that there is less muscle covering these than the neighboring areas. Other points on the anterior portion of the chest producing similar percussion changes are those over the upper, particularly the second and third intercostal spaces near the sternum. The pectoral muscle spreads out over these areas in the form of a thin sheath instead of a fleshy mass as it does further out towards the axilla. The change noted here is more marked than it is in the first interspace noted above, and is especially marked in advanced tuberculosis when the muscles have degenerated. Under such conditions these changes have often been wrongly interpreted to mean localized areas of emphysema and have even been thought to show the presence of cavities.

In percussing upward over the lower borders of the chest, anteriorly, there is such a distinct change noted when one meets the lower border of the pectoral muscle, that one could not give an opinion from percussion alone as to whether or not there was a slight pulmonary infiltration. This change is due to the increased amount of muscular tissue through which the percussion wave must pass.

The axilla is comparatively easy to percuss because of the fact that the chest in this region is not covered with thick fleshy muscles. The same applies, though in a lessened degree, to the base of the lung posteriorly up as far as the angle of the scapula, the broad back muscles covering these parts being thin.

In the interscapular space there are two factors which make percussion findings difficult to interpret, the muscles and the underlying heart and mediastinal tissues. The heart produces distinct percussion change on both sides of the spinal column from the seventh to the ninth dorsal vertebra, and if the mediastinal glands are enlarged the area immediately above this will also show change. The rhomboidei muscles are also found here, being attached to the spinal column from the seventh cervical to the fourth dorsal and running obliquely downward and outward to the scapula. .

Percussion of the upper portion of the chest posteriorly is extremely unsatisfactory because of the fleshy muscles and the scapulæ covering it.

Aside from these natural difficulties there are certain pathological conditions on the part of the muscles which must also be understood in order to interpret our findings correctly. I refer to the changes in the muscles which I have described as being due to a reflex stimulation from the underlying intrathoracic inflammations and which show as tonic contractions in the presence of acute inflammation and as degenerative changes after the disease has become chronic.

That the muscles are a very important factor in the production of the changes on percussion, whether we depend upon resistance or sound for our interpretation, can be proven by a very simple experiment. If one will percuss over the biceps when the muscle is relaxed and compare it with percussion over the same muscle when it is contracted, a very great difference will at once be noted. To make this experiment more persuasive, let one percuss over the trapezius or pectoral, both during a state of relaxation and contraction. These latter two muscles covering the chest, will at once demonstrate the fact that when these muscles are contracted there is greater resistance to the finger used as a pleximeter and a higher note elicited by the stroke than when they are relaxed.

I have no hesitancy in believing that much of the change noted on percussion of the apex in early tuberculosis is due to the spasm of the muscles covering it. That the change in the pulmonary parenchyma, produced by the infiltration, does produce some of the difference, must be admitted, but I believe that the greater factor in producing the change on percussion in these early apical infections before infiltration is well marked, is the change in the overlying muscles.

I have pointed out in my previous papers that there is a reflex tonic spasm of these muscles when the pulmonary parenchyma is inflamed. During this period the percussion change is very marked, but after the disease has existed for a long time, and the muscles have degenerated, the muscle element in percussion decreases.

What I have just described in tuberculosis applies also in all pulmonary diseases, but of course it is in pulmonary tuberculosis that we aim to make our finest distinction in examination, consequently it is here that these changes are of greatest diagnostic import.

That the muscles are no less a factor in auscultation than in percussion may be shown by a similar experiment with the pectoral muscle during auscultation. If one will auscultate a normal chest over the pectoral muscle with the muscle relaxed, he will note a soft breezy murmur. If he will then have the subject contract the pectoral muscle simulating what would occur if there were an underlying inflammation of the pulmonary tissue and the muscle were reflexly thrown into spasm, he will see that the respiratory note is changed. Instead of hearing a soft breezy note as above described, he will notice that the murmur is somewhat rougher and harsher than normal and that expiration is somewhat prolonged.

If we compare this to our findings on auscultation in early inflammations of the lung, such as apical tuberculosis, we will note that they are practically the same. The muscles covering the apex being in a state of spasm, present the same auscultatory phenomena as we have noted over the pectoral which is artificially contracted, the inspiratory note being slightly roughened with increased harshness and the expiratory note being prolonged.

Another very common phenomenon found in early tuberculosis is a diminished respiratory murmur. It can readily be seen that the condition of the muscles is a factor in this. While it is probable that the lessened elasticity of the lung tissue has something to do with it, at the same time the greater resistance offered to the inspiratory effort by the muscles covering the apex, which are thrown into a state of tonic contraction, must be an important factor. I have described this complex picture presented to the ear in early tuberculosis as "impeded breathing"; meaning by this that the air enters the lung as though it were forcing its way against obstacles. The murmur instead of being smooth and of its usual volume seems to be diminished, somewhat rougher, and harsher than normal. I am now convinced that much of the change is caused by the contracted muscles rather than the air in the lung.

It will be noted also that the auscultatory sound as well as the data obtained on percussion, are different near the sternum and in the middle of the first interspace between the deltoid and pectoral muscles from that found over the muscle masses.

I do not wish to be understood as claiming that all the changes which we find on auscultation are due to the muscle condition, but I

wish to call attention to the fact that there is a muscular element in all auscultation findings in the chest and that the auscultatory sound in early tuberculous infections is especially influenced by the underlying contracting muscles. After severe changes such as dense infiltration, which lead to the formation of scar tissue and cavity formation in tuberculosis, and such as occur when other pulmonary diseases are present in the lung, the muscular element probably becomes less of a factor and the pulmonary tissue more of a factor in the production of the auscultatory sounds.

The muscular element has been recognized in examination of the chest unknowingly; for example, teachers of physical diagnosis, and text-books, often tell us that if we wish to fix in our minds the normal vesicular respiratory murmur, it is best to listen in the axilla. The reason for this is not that there is any purer sound heard here than over any other portion of the chest, but that the sound is less affected by muscles, because there are no fleshy muscles covering the chest in the axilla.

My purpose in writing this paper is not to furnish a comprehensive discussion, but simply that I may throw out some suggestions to be taken up and utilized by clinical observers.

THE DIAGNOSIS OF CHRONIC DUODENAL CATARRH

By MAX EINHORN

Professor of Medicine, New York Post-Graduate Medical School and Hospital; Visiting Physician, German Hospital

New York

While an acute duodenitis can frequently be clinically recognized, especially if catarrhal jaundice happens to accompany it, the diagnosis of chronic duodenitis is extremely difficult. Boas hesitates to even make an attempt at such a localization of the affection.

He says: "According to my opinion the differentiation between chronic catarrh of the small intestine or the large bowel is of practi-

· cal value. . . . In the attempt of still further localizing the process in the different portions of the intestine we lose all scientific foundation."[1] This statement of Boas is shared by all clinicians and authors. The presence of mucus in the feces, its shape (large or minute pieces) and color (whitish or bile stained), permits the diagnosis of intestinal catarrh and its localization in the large or small intestine, but no further subdivision of this rather long organ. If the seat of the catarrh is lodged in the duodenum or the beginning of the small intestine, there may be no mucus found in the stool, for then it frequently becomes perfectly digested.

While clinically the diagnosis of chronic duodenal catarrh thus far could not be positively established, a few instances of this affection found in autopsy have been published. Dr. René Gaultier who has just written an excellent book on "the Diseases of the Duodenum,"[2] mentions the entire literature and fully describes Lesage's case, which is briefly as follows: A female patient suffered for five years from pains in the epigastric region, principally three hours after meals. Slight dyspnea was also occasionally present. Her appetite was good, but soon she began to take less food, in order to be less molested by the pain, and she grew thinner and thinner. There was no vomiting. The stools had a normal appearance; there was never melena. The gastric juice was examined and found to be normal. Patient died and the autopsy revealed a localized inflammation of the duodenal mucosa.

The possibility nowadays of obtaining the duodenal contents[3] and subjecting them to a thorough examination has widened our diagnostic means in this upper portion of the small intestine. I firmly believe that under favorable conditions a chronic duodenal catarrh can be recognized by the presence of considerable quantities of mucus in this organ.

I may be permitted to first describe one of my cases recently observed.

April 1, 1910. Mrs. H. H. R., about 38 years old, suffered for the last 15 years from digestive disturbances. The principal symptoms were pains about 2-3 hours after meals, considerable flatulence, and frequent diarrhea. Occasionally patient would also pass large pieces of mucus with the stool, preceded by colicky pains. Patient had undergone various courses of treatment and diet but

without any appreciable benefit. She had lost somewhat in flesh but not to any great extent. Examination showed: chest organs are normal, the stomach enlarged, extending to from 1-2 fingers below the navel; both kidneys are slightly movable (first degree). The epigastric region is somewhat tender to pressure, although no distinct pain can be elicited. The digestive test capsule given April third appeared within 15 hours and showed a disappearance of all the test substances. The test breakfast given on April fifth revealed HCl+; acidity = 75; no blood; no appreciable quantity of mucus. The urine was perfectly normal, and a microscopic examination of the stool failed to show anything wrong. The examination of the duodenal contents was then performed on April twelfth. Patient had a cup of tea and sugar at 7:30 A. M. and a duodenal pump was introduced with a glassful of water at eight. At 8:30 gastric contents were aspirated, clear fluid, without any admixture of mucus, HCl+; acidity = 40. 9:30 A. M. The pump has reached the duodenum, fluid is slowly aspirated. It has a grayish-turbid color; thicker particles of mucus are visible; reaction alkaline. For 10 minutes the character of the aspirated fluid showed the mentioned characteristics, when upon further aspiration clear golden yellow bile began to run into the syringe. The duodenal contents showed the presence of all the three ferments in normal amounts.

The diagnosis of chronic duodenitis in this case appears to be justifiable. The mucus trickling out from the duodenum, while none was found in the stomach, indicates a localized affection of the duodenum. Of course it will require the study of a great number of cases before the diagnosis of chronic duodenitis can be clinically established.

For the present the diagnosis can but tentatively be made.

The main features from which chronic duodenal catarrh can be recognized are as follows: Long history of digestive disturbances; epigastric pains about 2-3 hours after meals; slight hyperchlorhydria may be present or normal gastric secretion; flatulence; normal stools or diarrhea; tenderness on pressure in the epigastric region; presence of white mucus in the duodenal contents; golden-yellow and clear bile without any mucous shreds.

Just as well as the gastric contents in conjunction with the subjective symptoms help establish the diagnosis of chronic gastric

catarrh, in a similar manner the quality of the duodenal contents in combination with the morbid phenomena present will aid us in establishing a diagnosis of chronic duodenitis.

REFERENCES

1. I. Boas.—Darmkrankheiten, II. p. 216.
2. René Gaultier.—Les Maladies du Duodenum et leur Traitement. Paris, 1910.
3. M. Einhorn.—A Practical Method of Obtaining the Duodenal Contents. Medical Record, Jan. 15, 1910.

THE DIAGNOSTIC SIGNIFICANCE OF THE ACUTE HEADACHES OF CHILDREN

By LEGRAND KERR

Visiting Pediatrist, Methodist Episcopal, Williamsburgh, Bushwick and Swedish Hospitals; Consulting Pediatrist, Industrial Home for Children, etc.

Brooklyn—New York

The presence or absence of headache in young children is not easy of determination. This is true of all painful conditions, for in the very young there is an inability to definitely locate painful sensations. Even in the older child of average intelligence the same difficulty exists.

And yet, the occurrence of headache in children is of far greater significance than a similar condition in adult life, and the only safe manner in which to consider it is as an important symptom the cause of which must be determined definitely. The habit of considering this symptom lightly will eventually lead one into serious error, and the younger the child, the more forcibly this applies.

Headache is not of uncommon occurrence after the child has

reached the age of five years, but before that period, despite the great difficulty in its recognition, it is not common, except in diseases of the brain or the meninges. In the very young, recognition is only possible when there is considerable intensity. The usual manifestations are pulling at the hair or the ears, continuous rolling of the head from side to side, and frequent or persistent contraction of the muscles of the forehead. With either one, or a combination of these, there is an associated restlessness and more or less crying.

With the determination of the existence of headache there must immediately follow a determination as to whether it is acute or chronic. In the present writing, we shall consider acute headaches alone.

In practically every instance the acute headaches of children are associated with an elevation of temperature. The first thing that must be done is to determine to just what extent the headache is due to that particular rise of temperature and this is decided by two factors, viz., the intensity of the fever and the character of the headache.

Given a temperature under 103 deg. F., headache is rarely present in children unless there is disease of the brain or the meninges. Under such circumstances it is likely to be more or less persistent and intense. When entirely due to a rise in the temperature, headache is usually greatly relieved by pressure over the temples, by the application of cold to the head, and by massage of the veins of the neck. On the other hand, active motion causes an increase in the pain. It is true of all febrile conditions in children that they are usually associated with some degree of headache.

It is not uncommon to find that the scalp of a child is the site of one or more circumscribed areas of inflammation and the tissue in the immediate vicinity, and occasionally for a considerable distance from the foci, is very tender, and pressure gives the child pain. Such conditions are readily mistaken for headache. Then again, more rarely, rheumatism exhibits most of its manifestations for a time in pain in the aponeurosis of the scalp and the child complains as of headache. Palpation easily discloses the true nature of both of these conditions.

The headaches due to toxemia are almost always characterized by pain which is referred to the course of a nerve and is unilateral. If such a headache occurs in a child who is already the victim of some

kidney lesion, it should at once excite our suspicion of uremia, regardless of the presence or absence of a rise in temperature. Of course, the large majority of this type of headache is due to an acute toxemia dependent often upon constipation or overfeeding, and is relieved at once by active catharsis. The acute headache which accompanies the onset of many of the infectious diseases is readily differentiated because the other symptoms of disease are usually more or less prominent and clearly indicate the etiology of the accompanying headache. The headache of tuberculous meningitis is usually continuous and severe, bearing absolutely no relation to the temperature which is usually low. Generally speaking, the greater the disproportion between the intensity of an acute headache and the height of the temperature, the more indicative it is of meningitis. This holds true particularly in the tuberculous form of meningitis because it is the more common variety and exhibits a rather low temperature range. In purulent meningitis the temperature runs high and the symptoms are so rapid in their onset and progression that we are not left long in doubt as to the cause of the trouble. The same may be said of the epidemic form. In simple meningitis and in influenza meningitis the temperature is always higher than in the tuberculous form, and the headache is intense usually within the first twenty-four hours.

The diagnosis of the acute headaches which are dependent upon some disease of the organs of special sense is generally easy if the usual locations of such acute headaches are recalled. While not absolutely a rule, nevertheless the location of headache is strongly indicative of its cause.

Acute headaches in the frontal region in children are usually due to autointoxication, ocular overstrain, disease of the nasopharynx, and less commonly to syphilitic nodes or to foreign bodies (in the nasopharynx). Less frequently anemia may cause such a headache. Headaches showing most of their intensity in the vertex are usually due to anemia. The headache of meningitis is referred to the same locality.

Occipital headache is dependent mostly upon middle-ear disease or to spinal caries in the cervical region. Some epileptics exhibit similar headaches. Although often referred to this region the headache of meningitis does not show its characteristic intensity in this location.

Headache referred to the area about and above the ears (espe-

cially if unilateral) is at once suggestive of otitis, foreign body in the ear, or caries of the teeth.

The headache accompanying catarrhal inflammation of the sinuses is very severe, and may often be accompanied by little or no rise in temperature. I have seen such cases in which the child was not visibly ill, but the headache was intense, and the only feature that would attract attention to the true nature of the disease was a slight and easily overlooked nasal discharge. In one such case I clearly recall that there was not even nasal discharge but merely the presence of "snuffles."

GASTRO-INTESTINAL HEMORRHAGE (MELENA) IN CHILDREN

By LOUIS FISCHER

Attending Physician, Children's Wards, Sydenham Hospital, and Riverside and Willard Parker Hospitals

New York

A hemorrhage which involves the gastro-intestinal tract is difficult to localize. In some cases, well defined symptoms will be noted, whether the bleeding takes place in the stomach, in the small or in the large intestine; other cases, however, will have all symptoms masked. As a rule, if we are dealing with an active hemorrhage, there may even be the presence of shock similar to post operative bleeding.

Causes. Erosions of the gastric mucous membrane are frequently caused by irritants. Food that is too hot may irritate the gastric mucosa in a sensitive child where subnormal conditions associated with profound anemia exist. A powerful vegetable or mineral emetic, such as tartar emetic or apomorphia, will incite vomiting and may lead to direct traumatism resulting in bleeding.

What has been said of the stomach applies with equal force to intestinal irritation. Feeble infants receiving drastic cathartics such

as jalap, scammony, croton oil, and podophyllin will frequently have active purging ending in blood-stained mucus. If such irritation is considerable, inflammation and ulceration may be induced. It is important, therefore, to weigh carefully the resistance of a child and its vitality before giving it violent medication.

Another frequent cause of bleeding is gastric ulceration. It may also be caused by Henoch's purpura fulminans. Associated with the internal hemorrhage there are frequently found visible petechial or purpuric manifestations on the skin. Such spots may vary in color from brown to deep-blue, and in size, from a pin head to as much as a bluish patch several inches in diameter.

Symptoms. Extreme pallor of the skin due to the exsanguination, a feeble or thready pulse, depending on the quantity of blood lost, and a subnormal temperature. These are the symptoms most frequently seen.

When hemorrhage continues there is loss of weight. As a rule diarrhea is an early and continuous symptom. In addition to what has already been said regarding the systemic result of the loss of blood, children old enough to complain give no subjective symptoms unless it be that they complain of being tired and do not care to walk. Vomiting is a frequent and distressing symptom in some cases. Such vomit will generally be dark-colored or black and tarry. Sometimes we find it to be of a bright scarlet color. In another variety of cases there will be occult bleeding with constant oozing, and such bleeding will be difficult to locate. Duodenal ulcers may give rise to a few symptoms, but the clinical picture is identical with that which has been described as indicating gastric hemorrhage.

Intestinal Bleeding. Blood from the small intestine is changed into a dark tar-color, so that the stool will resemble meconium. It is important to remember that bleeding if from the lower portions of the rectum or anus will show a pinkish-red color in the stool, but if it originates high up in the bowel the stools are usually black.

The microscope will frequently aid in identifying blood corpuscles; if, however, we have no blood stains on the napkin, or if the blood corpuscles have become disintegrated, then the hemin crystals can be recognized by the following test: To one drop of the semi-liquid stool mix some glacial acetic acid and a few crystals of table salt on a glass slide, then heat to boiling. On drying this

preparation and examining it microscopically dark rhombic crystals of hemin, if present, can be easily recognized.' This invariably proves the presence of bleeding.

Occult bleeding described by Boas of Berlin requires a careful chemical or microscopical examination of the feces if intestinal, or an examination of the vomitus if gastric, to settle the diagnosis.

Diagnosis and differential diagnosis. The diagnosis can usually be made by the bright scarlet blood vomited. Other cases may have the mucus stained with blood of a blackish or tarry appearance; even if the stool be carefully observed it may not show the microscopic evidence of bleeding, but will only prove the presence of blood by the test already described.

Scurvy is the cause of frequent bleeding in children. When we encounter spongy gums which bleed easily, their frequent examination to determine the presence of a scorbutic condition is imperative.

Syphilitic ulcerations may also bleed, especially if irritated by coarse food.

The oral cavity and the nasal passages should be carefully inspected whenever hematemesis is observed. Erosions of the lip and ulceration of the tongue will frequently add blood to the food, hence the determination of the source of the bleeding must be carefully considered before a positive diagnosis is made. A nasal polypus or traumatism in the nose or mouth may give rise to bleeding and the swallowing of the blood may give rise to misleading symptoms. It is important, therefore, to examine the nose and throat to exclude these organs as a probable source of the bleeding.

Prognosis. The prognosis depends upon the amount of the hemorrhage and upon the condition of the child at the onset of the hemorrhage. If we are dealing with a plethoric child, and there is no cardiac or vascular disease, then the prognosis may be good. On the other hand, we must always be on our guard for cases of hemophilia. A bleeder naturally implies a grave prognosis. As a rule a hemorrhage that will not cease after the first two days of active treatment should be viewed with alarm.

DIAGNOSTIC DIFFICULTIES IN RECONCILING THE PATHOLOGICAL FINDINGS WITH THE CLINICAL MANIFESTATIONS IN AN UNUSUAL CASE OF CEREBRAL SOFTENING

By ALFRED GORDON

Associate Member, Société Médico-Psychologique, Paris, France; Neurologist, Mount Sinai, Northwestern General and Douglass Memorial Hospitals

Philadelphia

In organic diseases clinical groups of symptoms must correspond precisely to well defined anatomical changes in tissues or organs. This is the rule. Occasionally, and fortunately, it is only on rare occasions, we meet with cases in which to our great surprise the most unexepected pathological conditions are found at autopsy, and we then experience great difficulties in attempts to explain the clinical symptoms by these unusual findings. This assertion is true in medicine in general, but particularly in organic nervous diseases. As example we may call attention to the subject of compatibility of life in cases of malformations of the central nervous system. In a recent contribution (Archives of Diagnosis, April, 1910) I reported multiple malformations of the brain and spinal cord in an individual who lived up to the age of 15 and who presented during life no unusual manifestations except a mild degree of mental feebleness. The findings at autopsy (Porencephaly, diplomyelia, etc.) were the most striking.

Presently I wish to put on record a case in whom the pathological state of the brain was not at all in accord with the manifestations during life and indeed great embarrassment is felt in an attempt of giving a reasonable explanation of such a divergence in the postmortem and in the antemortem conditions.

The patient was a young Italian, twenty years of age, laborer by occupation. He was admitted to Chester Hospital, Chester, Pa., service of Dr. J. Wm. Wood, with the following history given by his family physician, Dr. Alger. About ten days before his admission he began to lose control of his legs and in a day or two he was unable to walk. The condition steadily grew worse until he was placed

in the hospital. The onset of the weakness in the limbs was accompanied by pain in the feet, ankles and legs.

The hospital record shows that there was a lateral enlargement in one parotid region, but apparently in the soft structures and not in the gland itself. According to the patient's relatives this condition existed since birth. The head presented certain peculiarities, such as flattening of the parietal regions and bulging of the forehead. Similar asymmetries were noticed also on the thorax. The pupils were equal and reacted well to light and accommodation. As the patient was in the hospital but twenty-four hours and the condition became serious very rapidly, no examination of the eyegrounds could be made. The heart and bloodvessels were apparently normal.

The upper extremities showed slight wasting of the muscles of the shoulder-girdle on both sides and of the arms, but there was no involvement of the motor power or of the sensations. The lower extremities appeared to be emaciated. There was a decided decrease of motor power and only to a certain degree of sensations. The response to touch and pin prick was delayed. The patellar tendon reflexes were abolished. No ankle clonus and no Babinski sign could be elicited.

On admission he developed a slight cough and he appeared to be unable to bring up any mucus which constantly collected in his throat. He had involuntary micturition and defecation. His temperature was 99 deg. F., pulse 100 and respiration 25.

The patient's condition remained unchanged for nine hours, when he suddenly had a sinking spell accompanied by a marked acceleration of the pulse (150) and of respiration (50). He became cyanotic and cold. The lungs were filled with bubbling râles, second pulmonic sound became markedly accentuated and there was a loud systolic murmur at the same area. The pulse rapidly receded and death occurred at the end of twenty-four hours. According to the information obtained by Dr. Alger, the previous medical history was negative; the patient had always enjoyed good health.

Further details as to the patient's condition Dr. Wood could not furnish, as the patient remained in the hospital only twenty-four hours and his condition was such that a detailed examination could not be made. However, it was carefully observed that conspicuous manifestations concerned only the lower extremities, viz.: rapid
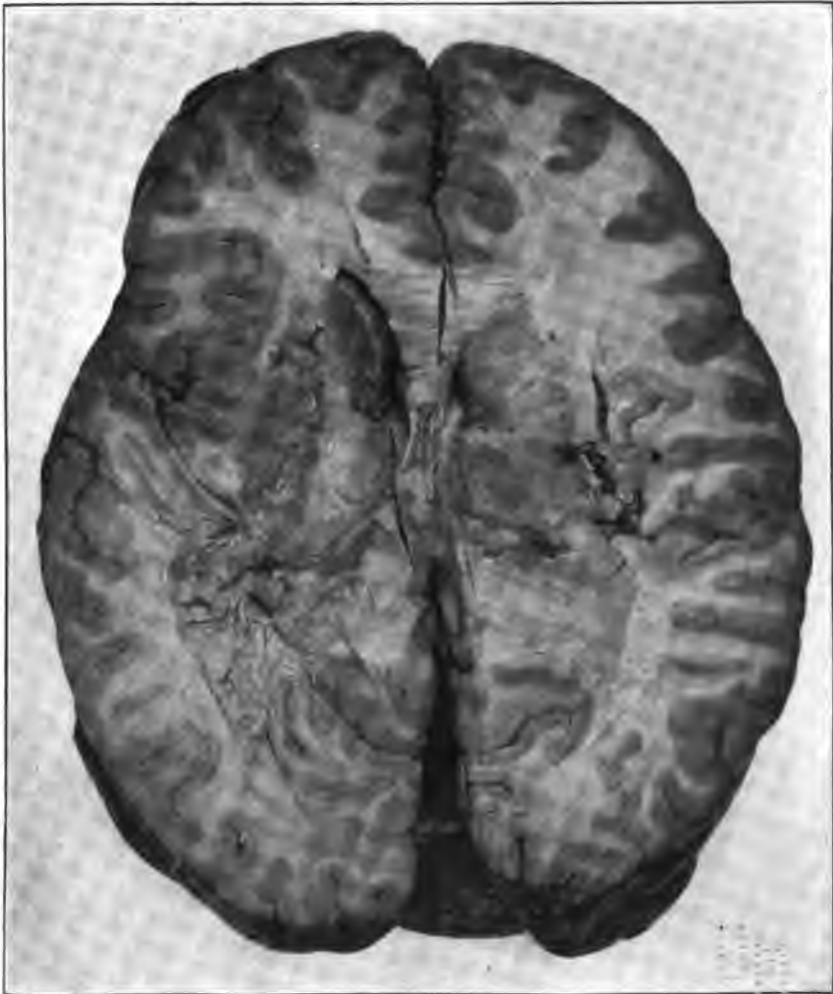
An Unusual Case of Cerebral Softening
Alfred Gordon

paralysis with loss of reflexes and diminution of sensations with pain in the legs for a period of ten days, then loss of control of both sphincters.

The autopsy was performed by Dr. R. W. Bailey eight hours after death. Outside of congested lungs nothing worth mentioning was found.

The brain, spinal cord, large portions of both sciatic and of both media nerves were removed. After hardening the brain in formalin (10%) for two days, then in formalin and Müller's fluid for two days, I made a transverse antero-posterior section (see illustration). In the left hemisphere a very deep softening had destroyed the entire internal capsule, the lenticular nucleus, a part of the candate nucleus and had infringed somewhat on the optic thalamus. Posteriorly it had involved the inferior longitudinal fasciculus and had continued at a small distance into the white matter of the occipital lobe. In the right hemisphere there was a large area of softening in its center, destroying a part of the internal capsule and the white matter between it and the convolutions of the insula.

The cord, medulla, pons, crura and the nerves were prepared for microscopical studies in the usual manner. A large number of sections of each of these portions were stained by Weigert's and Marchi's methods. Numerous black spots were found instead of normal fibers in both sciatic nerves and in the common nucleus of the descending roots of the pneumogastric and glosso-pharyngeal nerves in the medulla (fasciculus solitarius of Lenhossek) when stained according to Marchi. Recent degenerations were therefore present. The remainder of the nervous tissue was found to be normal by both methods of staining. The blood vessels presented everywhere a normal appearance.

Comments. The onset of the disease, viz., pain and a gradual loss of power in the lower extremities, also the loss of patellar tendon reflexes and diminution of objective sensibility—are all in favor of multiple neuritis. The rapidity of the termination of the case is very unusual for an ordinary case of Polyneuritis, such as alcoholic, saturnine, arsenical, mercurial and others, unless the respiratory center (bulbar symptoms) becomes involved. The sphincters are usually intact. The postmortem findings here are certainly those of neuritis, as both sciatic nerves presented evidences of recent degeneration.

Besides, the patient had some difficulty in expelling mucus which con-
tinuously accumulated in his throat. Barring a local disturbance, it
is certainly a bulbar phenomenon. The latter developed only a couple
of days before his death. The pathological findings showed recent
degenerative changes in the solitary bundle, which represents one of
the common nuclei of the ninth and tenth nerves. The case can
therefore be considered as a polyneuritis with involvement of the
medulla.

The rapidity of development of the symptoms as seen in this case
resembles that of Landry's paralysis. Indeed all the symptoms just
enumerated are met with in the latter affection, viz., paralysis of the
extremities, loss of reflexes, also involvement of the sphincters and
bulbar symptoms. Rapidity of development and fatal termination in a
brief period (three to eight days after the onset) are characteristic
of Landry's paralysis. But usually paralysis of the upper extremities
follow rapidly the paralysis of the lower extremities, which did not
occur in my case. However, atypical forms of Landry's disease have
been reported.

The most unusual feature of the present case is the above de-
scribed extensive softening of the brain. The patient was a very
young man, only 20 years old, his arteries and heart were found to be
perfectly normal. It is consequently difficult to explain the cerebral
destructive areas on the basis of arterial changes, of embolism or of
thrombosis. Besides, the microscopical examination of the various
portions of the central nervous system failed to reveal any indication
of vascular alterations.

Considering the fulminant character of the course of the disease,
the invasion of the nerves of the lower extremities, also of the nuclei
of the ninth and tenth nerves in the medulla, I am inclined to believe
that an infection of a grave nature invaded the patient's economy
and affected simultaneously the peripheral nerve-trunks and the
medulla and also produced numerous small hemorrhages in the cere-
bral tissue of both hemispheres with the result of softening. Death
can be explained either on the basis of the bulbar involvement or by
the extensive destruction of brain tissue thus suspending all functions
of the important centers with which the softened area was anatomi-
cally connected. Although to my knowledge cases of multiple neuritis
or of Landry's paralysis with involvement of the brain tissue have not

been reported, it is plausible in this case at least from the course of events to assume that the same infectious element produced simultaneous ravages in the peripheral and in the central nervous systems. The infection must have been of a very violent nature.

I am indebted to Drs. Wood and Alger for the privilege of studying this interesting case.

DIFFERENTIAL DIAGNOSIS BETWEEN GONORRHEAL EPIDIDYMITIS AND SYPHILITIC ORCHITIS

By A. RAVOGLI

Cincinnati

This subject we have always found of great interest on account of the difficulty which sometimes is found in establishing a correct differential diagnosis. Although to-day the Wassermann Test is able to disclose the presence of syphilis in the patient, yet this test will not explain the true origin of the affection of the testicle. It occurs not infrequently that some one who has latent syphilis is affected with gonorrheal urethritis, and from this the epididymis is affected and consequently he is affected with epididymitis. In an acute form, the diagnosis of such a case is easy. The acute onset of the affection after the third week of gonorrheal infection, the moderate swelling of the epididymis, the sudden acute pain, the great tenderness which does not allow the exploring fingers to touch the testicle, the erythematous redness of the scrotum of the affected side are so clear that nobody would doubt the case to be one of gonorrheal epididymitis. We have, however, some forms of epididymitis, subacute or chronic in their course, which are accompanied by little pain, in which the epididymis is greatly swollen, and is even occasionally accompanied by hydrocele. These forms of epididymitis occur sometimes after six months, in other instances even at a later period after the beginning of the gonorrheal infection.

This kind of epididymitis may occur in a person who has signs of syphilis, or at least who is believed to have had syphilis, and here we

find some difficulty in establishing whether we are confronted with a syphilitic orchitis or with a gonorrheal epididymitis.

Gonorrheal epididymitis may occur from in 7 to 16 per cent. of all cases of gonorrheal urethritis, and at any stage of the urethritis, but mostly in the fourth week. Usually the patient at that time finds his gonorrhea diminishing, and he thinks the discharge from the urethra entirely gone. The only trouble that remains is a frequent micturition with a certain burning sensation at the end of the urination. In most of the cases the patient has had some painful sensation in the testicle, which was due to the spreading of the process to the vas deferens. After this faint sensation of pain, the patient is taken with an acute pain of the testicle, which some one has compared to the sensation caused by a drop of molten lead falling on the testicle.

There is no doubt that gonorrheal infection is the cause of epididymitis. The presence of gonococci in epididymitis ending in suppuration has been found by Routier, Colombini, Grosz, Harttung, Von Karwawski, Murphy, Laurent, Pizzini, Raskai-Reach, Rosenthal, under the microscope, as well as by culture. In the cases of epididymitis ending by resolution with some serous collection in the vaginalis, Baermann, Nobl and also the writer could not find gonococci in the serum. It is quite natural that the effusion of serum, which comes as the result of the stasis in the lymphatics of the vaginalis, cannot contain gonococci. Gonococci, following the delicate epithelium of the vas deferens, find their way into the spermatic canaliculi, forming the mass of the epididymis, and produce inflammation of this organ. Some objection has been made to this contention because of the occurrence of epididymitis without an affection of the vas deferens, and this being the case, the spreading of the contagium by continuity could not be maintained. In our experience we have never met with cases of epididymitis without pain and the inflammatory condition of the vas deferens. On the contrary, we have always found epididymitis accompanied with swelling and tenderness of the whole spermatic cord. Nobl[1] and Baermann,[2] studying the anatomico-pathological condition, found that a catarrhal irritation may take place in the vas deferens without producing marked inflammatory alterations. The gonococci can easily pass to the epididymis which is soon inflamed. Indeed, the anatomical structure of the vas deferens, and that of the vas epididymis, are so very different as to prove

the correctness of this assertion. The vas deferens is made up of two muscular tunics,—in one the muscular fibers run crosswise,—and in the other they have a longitudinal arrangement; besides it has a mucous membrane with a strong compact epithelium. The ducts of the epididymis, however, have a loose epithelium in a condition of continuous formation, which at times leaves small naked areas that are often invaded by microorganisms. As a consequence, this place, the cauda epididymis, is the one most often affected by an inflammatory process. It is not entirely improbable that an epididymitis may be produced through the lymphatics which, from the posterior urethra, run to the ducts of the epididymis,—but this condition has not yet been proved. What we know is, that the gonorrheal infection, after affecting the vas deferens in a more or less accentuated way, is directly carried to the ducts forming the epididymis. When these canaliculi are inflamed they produce a great swelling, the compression prevents the emptying of the secretion, and the areolar tissues surrounding the canaliculi are also inflamed, consequently, a serous exudation takes place. This brief description of the pathological changes which occur in the epididymis will give a clear idea of the clinical diagnostic symptoms, which guide us in distinguishing a gonorrheal epididymitis from a syphilitic orchitis.

In syphilis there may be found in the secondary period a syphilitic epididymitis, as was described by Dron,[3] and confirmed afterward by Tanturri and Fournier. It comes in the form of a hard nodule at the head of the epididymis, in some instances nearly indolent, in others accompanied by a dull pain. The affection is often bilateral, or if it shows first on one side then a short time after, it will appear on the other side. The syphilitic symptoms are in full vigor, or at least the infection was acquired one or two years before. The absence of gonorrheal urethritis, the hardness and the swelling limited to the head of the epididymis and the lack of acute pain constitute sufficient ground for recognizing a syphilitic epididymitis.

In some cases the inflammation does not remain limited to the head of the epididymis, but spreads to the structure covering the testicle and also to the spermatic cord which is involved together with the epididymis.

We have often found the tunica vaginalis inflamed, containing effusion of serum in the form of hydrocele. The same condition was

found by Jullien, Keyes and Fuller, who have reported cases in which, together with an extensive induration of the epididymis and the testis, there was considerable hydrocele.

In some cases it seems that the vaginalis is very badly affected primarily, so much so as to have prompted Oelsnitz[4] and Ozenne[5] to publish some pertaining cases under the title of syphilitic pachy-vaginalitis. We have had cases of syphilitic affection of the testicle where the whole organ had reached an enormous volume. The epididymis could not be felt separate from the testis, but the whole formed an uneven mass, at times pyriform, at other times in the shape of a sausage extending to the spermatic cord. The serum was abundant and gave an undulating sensation. In the majority of cases we have tapped at the point where the most fluid was present and extracted serum in greater or less quantity, sometimes mixed with blood. We must state right here that it is remarkable what a beneficial influence is exercised by the antisyphilitic treatment in these cases. Many times patients have been treated for these conditions of the testicle of supposed gonorrheal origin without avail; as soon as they begun antisyphilitic treatment, the affection of the testicle underwent involution.

Virchow describes the syphilitic affections of the testicle in the same way as the syphilitic affections of other organs. One form is of an irritative nature. It occurs early after the infection and easily resolves, while the other is late in appearing, gummatous in character, usually breaks down and results in permanent damage and deformity of the organ.

The simple orchitis takes its origin from the albuginea and from the connective tissue forming the septa surrounding the seminal ducts in the form of an infiltration, which causes at first an enlargement and after a while a shrinking of the testis. The process may be equally diffused over the whole testicle, but usually is limited in several parts forming nodules which by contraction are later converted into depressions. This is the true orchitis which at times may be accompanied by some exudation into the vaginalis.

Gummatous products affecting the testicle form a late syphilitic orchitis. Infiltrated nodules constitute this affection. It appears as a late manifestation of syphilis. The enlargement of the testicle takes place slowly, is accompanied by little or no pain, but usually

there is a sense of weight. As the process consists in a gummatous production growing into the substance of the testicle, it is of uneven surface. The gumma of the testis but rarely suppurates, it is usually reabsorbed resulting in sclerosis and contraction of the affected tissues. The segregating parts of the gland rarely escape destruction, and consequently there is diminution of the spermatic secretion, and in some cases total aspermia with lack of desire for sexual relation, or even impotence.

After some months the testicle is gradually diminished in size, its shape is somewhat preserved; usually it remains uneven with hard depressions. In some cases it is converted into a shapeless rudiment.

In rare cases the gummatous infiltration of the testicle forms a tumor which involves all the coverings of the testicle involving even the skin of the scrotum which softens and becomes perforated. In these cases the gumma grows exuberantly as a vegetating mass in that form which was called fungus syphiliticus testis. In the beginning there is some pain, which gradually subsides. The vegetations undergo necrotic changes, suppuration taking place with fever and weakening of the patient.

We can state in a general way that when affections of the testicle make their appearance at a late period of syphilis, they are usually of a gummatous nature. As a consequence, ulcerated gummata are found in other parts of the body, especially the periosteum, in the form of osteo-periostitis, or of periosteal gummata. In some cases ulcerated gummata have already healed up and superficial, isolated, whitish atrophic scars are witnesses of the syphilitic process, and will usually be of some value in the diagnosis.

As stated in the beginning of the article, notwithstanding all the given diagnostic points there still may arise doubt as to the nature of the affection.

1. In gonorrheal epididymitis we find: An acute inflammation limited to the epididymis. 2. Moderate swelling with great hardness of the epididymis. 3. Excessive pain, with tenderness, which renders the palpation of the organ difficult. 4. Involution, inflammation and tenderness of the spermatic cord, and redness of the side of the scrotum. 5. Small quantity of serum in the presence of acute hydrocele. (The serum is contained in the vaginalis testis, in the space between testicle and the epididymis.) 6. Some gonorrheal dis-

charge from the urethra, or symptoms of posterior urethritis with cloudy urine. (Admission by patient of recent gonorrhea.) 7. In the case of gonorrheal orchi-epididymitis, of phlegmonous character ending in suppuration, that the whole organ may be converted into a hard mass of an enormous volume. (In these instances, however, the pain, the fever and the general suffering will afford enough ground to make a differential diagnosis.)

Syphilitic orchitis offers the following syndrome:

1. It appears gradually, without much pain, the patient having only a sensation of weight. 2. The epididymis cannot be distinguished from the testicle, as it makes an uneven mass. 3. The testicle can be palpated without causing any pain to the patient. 4. The spermatic cord is not involved, but the testicle is greatly enlarged and deformed. 5. When exudation takes place the affected side has a pyriform shape, being enormously swollen; the fluid, amounting sometimes to five or six ounces, is contained in the vaginalis communis. 6. Syphilis has been present for some time; enlarged lymph glands in the groins and neck, or stigmata of the syphilitic ulcerative process are in evidence. 7. The absence of acute pain, the lack of fever and the relatively mild general suffering are symptoms which readily permit differentiation between a syphilitic orchi-vaginalitis with hydrocele and a phlegmonous suppurating orchi-epididymitis.

From our experience we have no doubt that the gonorrheal inflammatory process of the epididymis may be the cause of syphilitic orchitis. In a syphilitic patient gonorrheal urethritis often occurs, followed by gonorrheal epididymitis. We have observed in some of these cases that the affection of the testicle has no decided typical character; it is subacute and also chronic in course and not very painful, but the organ is very much swollen, the epididymis cannot be easily distinguished from the testicle. We believe that these cases are hybrid forms of orchi-epididymitis, resulting from both infections. It is a well known fact that, whenever an irritation is applied, there the spirochetæ appear. In this way, the inflammatory process produced by the gonococci is the exciting cause for the syphilitic inflammatory process.

The treatment in these cases supports our views. It must be directed against the gonorrheal affection, and at the same time also against the syphilitic process. With good and appropriate treatment,

both local and constitutional, the recovery of obstinate and long standing cases may be effected.

The influence of gonorrheal epididymitis and syphilitic orchitis on the generative function deserves a great deal of consideration. In most cases of epididymitis the process undergoes involution, the swelling gradually diminishes, the exudation is reabsorbed, the pain subsides, the epididymis remains hard, and after some time returns to its normal size. The cauda epididymis, however, remains in the form of a hard nodule of the size of a hazelnut, and will always remain so as a witness of the past inflammation. The true pathological alterations have been but rarely observed, and nearly always in the cases of suppuration where the canals of the epididymis have been found destroyed and necrotized. Baermann, from his observations, came to the conclusion that in a great many cases of epididymitis the vases of the epididymis are greatly injured and that for this reason the epididymis but seldom returns to its normal condition. The inflammatory process originating from the mucous membrane of the canaliculi of the epididymis affects the connective tissues, the vaginalis and the skin of the scrotum to such a degree as to make the entire involved area into one mass. It is possible that this inflammatory process of the surrounding tissues is the result of the destruction of the canals of the epididymis. So great an injury to the epididymis does not occur in every case, but the hard nodule remaining in the cauda epididymis is nothing else than sclerotic tissue in the form of cicatrix from the effusion in the connective tissues, which bind together the canaliculi forming the epididymis.

From all observations it seems that from the gonorrheal epididymitis there may result the destruction of the vases of the epididymis; or, if they escape destruction, that they remain compressed by sclerotic connective tissue, with their functions impaired. For these reasons it is the belief of many authors that epididymitis is very frequently the cause of sterility in the affected testicle. However, we have had occasion to examine men who in spite of an early epididymitis had been fathers of large families.

Syphilitic involvement of the testicle calls forth pronounced deterioration of the organ. It remains uneven, hard, shrunken and atrophic. The semen is affected by the spirochetes, and the transmission of syphilis to the offspring is a valid proof of the infected semen.

The infectious quality of syphilis is preserved longer in the semen than in other fluids of the organism, so that when syphilis has ceased to be transmittable by the ordinary ways, the semen has still the property of infecting the offspring, and through it of communicating the disease to the mother. In consequence of destruction of the parenchyma of the testicles by syphilis, permanent impotence with aspermia may be the result.

REFERENCES

1. Nobl.—Zur Histologie der blennorrhoischen Deferentitis und Epididymitis. Archiv. f. Dermatologie und Syphilis, Vol. LXVII.
2. Baermann, G.—Weiterer Beitrag zur Pathologie der gonorrhoischen Epididymitis. Archiv. f. Dermatologie und Syphilis, Vol. LXXVII.
3. Dron.—Archives de Médecine. Ser. 6. Vol. II. 1863.
4. Oelsnitz, A.—These de Paris, 1886.
5. Ozenne.—Gazette hebdomad. de Médecine. Ser. 2. XXV., 1888.

DIAGNOSIS OF STRICTURE OF THE MALE URETHRA

By VICTOR C. PEDERSEN

Deputy Surgeon, New York Hospital, O. P. D.; Attending Genitourinary Surgeon, People's Hospital

New York

Stricture of the male urethra is fundamentally an obstruction varying in degree from total obstruction to partial obstruction, which may be only sufficient to slightly alter the form of the stream. Both forms, however, are capable of inducing profound sequels in the other portions of the genitourinary tract. Thus it is that stricture becomes potentially one of the most important and dangerous sequels of gonorrhea.

Since strictures are obstructions, we have to consider under the head of the diagnosis of stricture the number, situation, diameter, length, symptoms and complications of each stricture, together with the results of treatment upon it.

The diagnosis of the number of strictures is made conveniently

with bougies-à-boule, or ball sounds. The woven and flexible type of these is preferable to the metal and rigid form, for the reason that the flexibility permits the ball point to follow the course of a tortuous stricture with less traumatism to the walls. Woven-olive-pointed and cone-pointed dilators and Banks's whalebone bougies are good instruments to use in conjunction with the ball sounds.. The finger may trace by penile and perineal examination and rectal touch the number and character of strictures in many cases.

The diagnosis of the situation of a stricture is a matter of determining its location with regard to the three regions of the urethra originally designated by Thompson as follows: The first region includes the membranous and an inch of the bulbous urethra and covers upwards of $1\frac{3}{4}$ inches from the bladder orward. The second region begins at the anterior limit of the first region and reaches to a point $2\frac{1}{2}$ inches back of the meatus, extending therefore between $2\frac{1}{2}$ and 3 inches along the urethra. The third region includes the anterior $2\frac{1}{2}$ inches measured from the tip of the organ.

Diagnosis of the diameter or caliber of a stricture is of course reached by passing exploring instruments through the stricture, chiefly ball-pointed sounds, olive-pointed silk dilators, Banks's whalebone bougies and whalebone filiform guides. Experience indicates the wisdom of selecting a size 20 flexible ball sound, of noting the point at which its passage is refused, and then of reducing the size until the instrument slips through.

As a rule the ball sound smaller than 12 French has too flexible a shaft for satisfactory use. One here resorts to olive-point, silk or cotton woven dilator. These instruments have a long gradual conical point surmounted by an olive and a reasonably rigid shank. This may enter small strictures and explore them carefully. The whalebone guide is indicated in the closest form of stricture causing more or less absolute obstruction. The method of using these is, comparatively speaking, simple. A number of guides are selected, thoroughly washed with hot water and green soap, and then one after the other they are passed into the urethra and a gentle endeavor is made to pass the stricture. As soon as one has failed another is taken, so that one after the other is repeatedly tried until finally the stricture is passed by one of them.

One might digress to say that a sensible classification of strictures

for clinical purposes is into three types so far as their diameter is concerned: "Open" being 20 French and larger; "close" being 10 to 19 French, both inclusive; and "tight," "obstructing" or "filiform" strictures of 9 French and smaller.

Diagnosis of the length of stricture, meaning its extent along the urethra, is of great importance. One reaches this point of knowledge in two simple ways: (1) by passing a ball sound through the stricture; while this is left in situ, caught against the posterior face of the stricture, another ball sound is passed to the anterior face of the stricture. Between the heads of the instruments thus placed the finger easily makes out the length of the stricture; (2) by passing the dilating instrument, such as an olivary dilator, or Banks's bougie partly through the stricture. After this palpation of the stricture it spreads over the instrument, either in the penile urethra, penis or through the rectum. In this manner one determines very accurately the elements of each lesion.

The diagnosis of the clinical features of a stricture must be determed by the story of the patient, the duration of the stricture, the nature and severity of symptoms, especially of obstruction, the forms and results of treatment, and the like. Knowledge of these features will allow one to recognize whether the stricture is simple or inflamed, elastic or fibrous, obstructing or nonobstructing, and the like. Many of these features may be determined by a careful history with reference to four factors: The function of urination, the existence of urethral discharge, the function of the sexual act, and various nervous symptoms, commonly called neuroses.

The infectiousness of a stricture is a characteristic which should always be diagnosed before treatment is undertaken, on the ground that harm of serious degree may come to the patient if the bacteriology is unknown. Secondly, all shreds should be examined as to the presence of organisms before any radical treatment is undertaken. The usual examination of the urine, especially of the first glass, should be made for organisms washed away in it. If the stricture is deeply placed, occasional massage of the stricture-bearing region is advisable, to determine whether or not the lesion is infectious.

Complications of stricture are all important and should always be looked for and diagnosed. One cannot, however, in a very brief paper do more than state a reasonable list or series of these complica-

tions. The diagnosis of many of them is self-evident. The more important complications of stricture which should also be thought of in considering diagnoses are: Chronic urethritis, infective and non-infective; periurethritis, not uncommonly a slowly advancing lesion; periurethral abscess, running an acute, subacute or chronic form; false passages, usually giving a history of violent treatment or of long-neglected stricture in itself; prostatitis, a most varied and difficult condition, whether in the form of acute, subacute and chronic inflammation and congestion, and in the form of a general focal or follicular suppuration and hypertrophy; inflammation of the bladder; inflammation of the ureters and kidneys. Of all the complications probably the most important are those of the kidneys so far as immediate influence upon life is concerned.

General Retrospects

VISCOSITY OF THE BLOOD

(BASED UPON THE LITERATURE OF THE LAST THREE YEARS)

By LOUIS BERTRAM SACHS

New York

LITERATURE

BACHMANN, E.—Die klinische Verwertung der Viskositätsbestimmung an Hand von vierhundert Bestimmungen. (Deutsches Archiv f. klin. Medizin, 1908, Nos. 3 and 4.)

BLUNSCHY, F.—Beiträge zur Lehre von der Viskosität des Blutes. (Correspondenz Blatt. f. Schweizer Aerzte, Aug. 15, 1908.)

HESS, W.—Die Viskosität des Blutes bei Gesunden. (Deutsches Archiv. f. klin. Medizin, 1908, Nos. 3 and 4.)

McCASKEY, G. W.—The viscosity of the blood. (J. A. M. A., Nov. 14, 1908.)

ADAM, H.—Zur Viskosität des Blutes. (Zeitschr. f. klin. Medizin, 1909, No. 22.)

JORNS, G.—Viskosität des Blutes bei Gesunden und Kranken. (Med. Klinik, 1909, No. 28.)

TRUMPP, J.—Viskosität, Hämoglobin-und Eiweiss Gehalt des kindlichen Blutes. (Münchener med. Wochenschr., Oct. 19, 1909.)

RUBINO, C.—Sulla diagnosi precoce della insufficienza cardiaca. (Policlinico, Aug. 29, 1909.)

MÜLLER, W.—Blutviskosität bei chirurgischen Krankheiten und Operationen. (Zentralblatt f. Chirurgie, Oct. 9, 1909.)

Investigators in the science of viscosimetry are unanimous in asserting that this study of the blood is destined to become not only an important aid in the diagnosis and prognosis of many pathological conditions, but also a guide in the treatment of certain diseases. The study of the viscosity of the blood has already so far progressed as to merit the special attention of the clinician. Burton-Opitz and McCaskey in this country and Hirsch, Beck, Hess, and Determann in Europe are the pioneers in the present ready means of the clinical application of this comparatively new science. Early investigators were handicapped by complicated and imperfect apparatus, but the recent investigators, especially *Hirsch* and *Beck* have simplified and

improved both the apparatus and the technic so that viscosimetry can now be readily adapted to the needs of the clinician.

The two factors determining the peripheral resistance to the circulation of the blood are the ever-changing caliber of the arterioles and the chemico-physical character of the blood as indicated by its viscosity. Huertel has calculated that the work done by the heart of a dog is four times as great as it would be were the arteries of the dog filled with water. This difference is due to the viscosity of the blood, a physical property dependent on the freedom of motion between the molecules or particles which constitute the fluid, and which in the normal human individual, according to different investigators, is 3.5 to 5.5 times that of water.

There exists much difference of opinion as to the relative importance of the individual factors which are concerned in the production of the normal viscosity of the blood. *Huebner* has calculated that two-thirds to three-fourths of the viscosity is due to the number of corpuscles. It is certain that the red cells and their hemoglobin contents are great factors in the production of viscosity. *Adam* maintains that the viscosity is dependent primarily upon the amount of gas the blood contains; saturation with carbon dioxide producing a maximum of viscosity. If the carbon dioxide be replaced by oxygen, the internal friction is reduced to a minimum, but it rapidly rises to a normal degree on the further addition of carbon dioxide. It has clearly been shown that certain constituents of the plasma greatly influence the viscosity of the blood. This influence of the plasma may in some way be associated with the fibrin of the blood, as it has been noted that viscosity and coagulability increase and diminish together within certain limits. That viscosity of the blood is not altogether dependent upon the specific gravity is evidenced by the fact that in general fevers a high viscosity may coexist with a low specific gravity. The amount of protein and the salt constituents of the plasma greatly influence viscosity. Among these salts, the iodides occupy an exceptional position. They diminish the viscosity, and Mulla and Inada and many others are of the opinion that in this reducing property lies their therapeutic value. *Determann* takes exception to this view. *Bachmann* emphasizes the direct relationship in health between the percentage of hemoglobin and the viscosity. This relationship he designates as the hemoglobin-viscosity quotient. This quotient is obtained by dividing the hemoglobin percentage by the viscosity-value, and normally it should be between seventeen and twenty-one. In disease the hemoglobin-viscosity quotient varies widely. As evidence that the viscosity of the blood varies directly with the hemoglobin contents, *Jorns* cites lowered values in hemoglobinemias with a return towards normal as the anemia disappears.

The viscosity of the normal individual varies according to age

and sex. There exists a difference of opinion amongst some investigators as to the average viscosity in the different ages of the healthy individual. *Trumpp* in the determination of blood viscosity of 152 children obtained the following values: In infants 3.2 to 3.6; and in children between seven and thirteen years of age 3.5 to 4.1. *Hess* states that for children under ten years the average values are 3.9 for boys and 3.8 for girls. In the following decennary the average figures are 4.43 for males and 4.22 for females. According to different investigators the following averages are normal for the healthy adult: *Hirsch* and *Beck* 5.1; *Determann* 4.7 in men and 4.5 in women; Kollmann 5.1; McCaskey less than 5. *Hess* states that in the male between the thirty-sixth and the fiftieth year, the average viscosity is 4.91, and that after the fiftieth year there is a slight decline in the average value. In women after the fiftieth year there is a slight increase of viscosity. Blood viscosity is a relatively constant factor so that values above 4.4 to 5.3 in men and 3.9 to 4.9 in women may be considered pathological.

Blunschy states that muscular exertion when severe and long continued reduces viscosity, but increases it when mild and comparatively brief, even when there exists much perspiration. According to *Determann, Hirsch* and *Beck* and others those who eat large quantities of meat have a higher relative viscosity than vegetarians in whom the viscosity is materially lower. In a series of investigations the average viscosity for meat eaters was 4.85 and for vegetarians 4.32. The ingestion of large quantities of water and food greatly influences viscosity.

McCaskey states that the principle of forcing blood through a given length of a capillary tube under definite pressure and temperature conditions and comparing the time with that which it takes to force distilled water through the same tube under the same conditions, appears to be the only fundamental requisite in the apparatus for the determination of the viscosity of the blood. To *Hirsch* and *Beck* belongs the credit of having made practical application of the data and methods of Huerthel and preceding investigators to the requirements of clinical medicine. The apparatus of Hirsch and Beck has been modified by Determann, Bence and others. For the requirements of clinical medicine, absolute scientific accuracy is not necessary and so *McCaskey* has devised a very simple apparatus which he describes as follows:

"It consists of a capillary pipette (3) made from a piece of glass tubing with a lumen of 5 mm. One end is tapered (4) so that the rubber bulb (2) can be easily fitted on it. The other end is drawn out into a fine capillary tube, the exact size of which must be determined by experience. This capillary tube is substantially the same as the capillary pipette used in opsonic work. A convenient

length for the capillary portion of the tube is about six inches, and it should be made so that distilled water will pass through it under the negative pressure of the bulb in about five or six seconds. A fine inkmark is made at 5, just before the lumen of the capillary tube begins to enlarge, and each experiment terminates at the moment when the moving column of blood reaches this mark. It is first
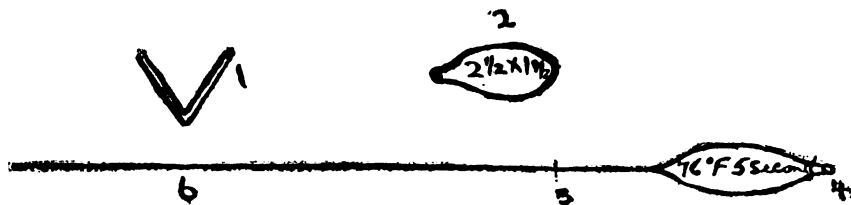
necessary to "standardize" the tube with distilled water which constitutes the unit of comparison. The rubber bulb (2) is taken between the thumb and index finger of the right hand and compressed until its inner surfaces are in contact. It is important that this technic should be accurately followed. If this be done there will not be any substantial variations in the negative pressure of the same bulb in different experiments. If, however, the bulb is compressed flatly, say between the palmar surfaces of the thumb and two fingers, the negative pressure will be increased from forty to fifty per cent., and the results entirely vitiated. The negative pressure will vary with different bulbs. This bulb thus compressed is fitted over the capillary pipette at the end of the bulb (4) and the pressure released. Air flows into the capillary tube under a constant negative pressure. Holding a stop-watch in the other hand, the end of the pipette is immersed in distilled water contained in a watch crystal and the stop-watch started at the same instant. The watch is stopped when the column of water reaches the mark at (5). This is repeated three or four times and if there be any variation in the time, the mean of the several observations is taken and a label is attached to the tube showing the result and also the temperature of the room. The latter is important because the viscosity falls about two per cent. with each degree C. of rise of temperature, and if the observation on the blood is made at a temperature substantially different from that in which it was standardized with distilled water, corresponding corrections must be made. The clinical observation of the blood viscosity is made as follows: One arm of the V-shaped tube (made of glass tubing with a lumen of 1.5 mm.) is partially filled with blood by holding it against the under surface of a drop of blood exuding from the side of the tip of the finger or from the lobe of an ear. Five or six drops are required. This tube is then held by an assistant, or

in a suitable clamp by the arm from which the blood has been collected, leaving the clear arm of the tube for observation. The bulb and capillary tube are arranged precisely as heretofore described for the experiment with distilled water, and the end of the capillary tube is passed down the clear arm of the V-shaped tube until it comes close to the surface of the specimen of blood. Then while holding the stop-watch in the other hand, it is quickly plunged into the blood and the stop-watch is started at the same instant, the watch being stopped as before when the moving column of blood reaches the mark at (5). It is then simply a matter of dividing the time required by the blood to pass through the capillary tube by the time required by the distilled water, which in the pipette illustrated takes five seconds. If with this pipette it would take twenty-five seconds for the blood to reach the mark, the viscosity would be just 5. This observation can be made in three minutes and is sufficiently accurate to serve the purposes of clinical medicine. Sometimes the blood coagulates so rapidly that only a single observation can be made. This can be obviated by placing a crystal of hirudin into the V-shaped tube, as recommended by Bence and Determann. The blood will then remain fluid for twenty or thirty minutes. The greatest objection to the use of hirudin is that it is very hygroscopic and must be kept hermetically sealed, or in a chamber with a desiccator. Its use, however, is quite unobjectionable, as it does not change the viscosity in the least or even modifies rouleau formation, so that it is available for other purposes in which slow coagulation is desirable as well as the determination of viscosity. The viscosity tube can be cleaned in the usual way with water, alcohol and ether. If the tube is spoiled it can be easily and cheaply replaced."

Carbon dioxide markedly increases blood viscosity. Bence has lowered the viscosity when it was raised by carbon dioxide by the addition of oxygen to the blood. Asphyxia influences viscosity more promptly than any other known factor, whether the asphyxia be local or general. The experiment of *Determann* clearly evidences this fact. He placed a ligature around one arm for twenty minutes with the production of marked local stasis. The viscosity of the blood drawn from a finger on that side was nearly twice as great as the viscosity of the blood in the other arm. The viscosity had increased from 4.63 to 8.83. *Trumpp* obtained a viscosity of 12 in a new-born infant in blue asphyxia. Slight exertion in persons with cardiovascular or respiratory affections markedly increases the viscosity, a fact which *Blunschy* ascribes to the variation in the different proportions of carbon dioxide in the blood. *Blunschy, Jorns, Rubino* and others state that there is a variation in the blood viscosity as an early sign of cardiac insufficiency, and suggest the importance of this fact as an aid in early diagnosis. *Bachmann* found that hemiplegic pa-

tients with increased viscosity will, as a rule, die, while those who have a low viscosity can be given a good prognosis. Venesection lowers the viscosity of the blood by withdrawing solids and attracting the fluid from the surrounding tissues. To this fact is probably due the therapeutic value of venesection in the way of relieving an embarrassed heart. Both, intravenous infusion of saline solution and hemorrhage greatly lower viscosity, but while the effect of the former is evanescent, the effect of the latter is quite lasting. The viscosity of the blood is raised in certain conditions of respiratory incapacity as pneumonia and emphysema. As is to be expected the viscosity of the blood is low in the anemias and hydremias. In a case of splenic anemia in a child, *Trumpp* obtained a viscosity of 2.1.

The relation of viscosity to renal disease has occupied the attention of many investigators. It is now conceded that in chronic interstitial nephritis there exists a low viscosity even in the presence of a high blood pressure. This low viscosity in chronic interstitial nephritis is in all probability due to the anemia which is present in most of the cases. *McCaskey* and others are of the opinion that there exists in the preliminary stage of renal disease an increased viscosity which may possibly be a factor in the production of the cardiac hypertrophy.

Trumpp has observed an unusually high viscosity in the alimentary intoxication of children, and has found that the viscosity diminishes as the intoxication is corrected. In the adult intestinal diseases do not change the viscosity in any way except as they incidentally modify the blood. In a study of the influence of surgical affections on viscosity, *Müller* examined the blood of 1050 cases and observed that after an aseptic operation in which the peritoneum is opened, the viscosity increases rapidly during the next day and during the following four days gradually declines to normal, then it drops considerably below normal during the following two days, gradually returning to normal at the end of the week. In cases with acute inflammation, the viscosity is abnormally high, but the gradual decline below normal shows the same characteristic curve as in the aseptic cases. This decline of the viscosity below normal *Müller* designates as the phase of exhaustion. The importance of this curve is shown in the fact that any form of inflammation keeps the viscosity high, so that the rapid decline is a sign of freedom from complications.

Many drugs influence the viscosity of the blood. Alcohol however given greatly increases the viscosity. Caffeine also increases the viscosity while camphor renders the blood less viscous. Chloroform and ether do not seem to have any marked effect on viscosity.

In typhoid fever a diminished viscosity is the rule; cases of meningitis show an increased viscosity.

A STUDY OF BLOOD STAINS WITH ESPECIAL REFERENCE TO LEGAL MEDICINE

BY JUSTIN HEROLD

Professor of Medical Jurisprudence and Toxicology, Fordham University Medical School

New York

II

Source of blood stains.—In addition to determining that the stains are human blood, for forensic purposes it is often necessary to determine their source, i.e., from what particular part or organ the blood proceeds. This is not always easy to discover, but it can sometimes be demonstrated by careful microscopic examination, together with the position of some, if not all, of the blood stains. In case of nose bleed, for instance, cylindrical or ciliated epithelium from the mucous membrane will be found mixed with the blood, unless it should be severe enough to amount to a hemorrhage, in which case the blood will be pure, and free from this admixture. In either case there would probably be blood stains on the front of the shirt or clothing, especially in case of hemorrhage. Should it occur at night, there would be blood on the pillow and adjacent clothing. If the nose bleed is induced by blowing the nose violently the stain is usually large and pale, owing to the amount of mucous it contains, and when dry has a different appearance from an ordinary blood stain.

In blood proceeding from the mouth there may be found flat, nucleated cells and many bacteria. When from the stomach, particles of food may be mixed with it. Blood from the lungs is characterized by its bright red color, when fresh, but it may contain epithelial cells from the mouth or respiratory passages, and also leucocytes and bacteria. Blood from the intestines is apt to be mixed with fecal elements.

Menstrual blood. Blood from a profuse menstrual hemorrhage and that from a deep cut or wound are so similar that it may be hard to distinguish its source at first sight. Menstrual blood, however, usually contains mucous, a great number of leucocytes, stratified squamous epithelium from the vagina, occasionally columnar cells from the uterus, and vaginal bacteria. The presence of mucous or epithelial detritus retards its coagulation. Being frequently mixed with watery fluids, the red cells are usually less perfectly preserved and are less numerous in proportion to the albumen than in most

blood stains. Unless the squamous epithelial cells are in considerable numbers, and closely mixed with the blood, they may come from the anus or bladder. In the later stages of menstruation there is found a greater admixture of leucocytes, epithelial cells and mucous, yielding stains that can be readily identified. Should there be pus mixed with the blood, it is an indication of gonorrhea. Lochial stains are very similar to those of menstrual origin, although leucocytes, epithelial cells and masses of fibrin are apt to be more abundant, while shreds of decidual or placental tissue, which are present in the discharge for several days after confinement, may be considered specific evidence of a recent pregnancy. It is, however, very doubtful whether the evidence secured through examination of a menstrual stain is sufficient to justify a positive assertion as to its source, though its human origin may be determined by the precipitin test.

Rape in young women. Although this crime is not, strictly speaking, limited to any age, it is more likely to come to our notice from a medico-legal standpoint in the case of young women, or girls. It is exceedingly difficult to prove that this crime has occurred unless, in addition to the presence of blood there be also indications of physical violence; for the genitals and underclothing have been known to be intentionally stained with blood in order to substantiate a false charge, or the stains might be those of menstrual blood. In the latter instance the presence of epithelial elements in the blood will aid us in determining its source and in distiguishing it from blood the result of trauma. Unless the vagina be unusually small no hemorrhage is liable to occur in the case of a married woman.

Biological test.—After numberless experiments with the action of serum on various bloods, Uhlenhuth, together with Beumer and Weidanz, worked out a practical method of ascertaining the origin of a blood stain, in the medico-legal examination of blood in criminal cases, by means of the biological method, or a specific test that demonstrated that the blood under question was indeed human blood. This method, called the precipitin test, has proved its value. Its use is sanctioned and approved by many foreign governments.

Uhlenhuth found that by injecting a rabbit with human blood the animal developed a serum that would cause the formation of a precipitate in the blood serum of a human being. Experiments have shown that rabbits and fowls develop the best anti-human serum, but Uhlenhuth got the best results with rabbits, while Ewing obtained good results with fowl anti-human serum. The three methods of developing this antiserum are by subcutaneous, intravenous, or intraperitoneal injection. Different operators select different methods, but Uhlenhuth, Bordet and Hauser employed the subcutaneous and the intraperitoneal methods. The former is found, however, to cause abscesses. Graham Smith and Sanger find that

powerful antisera may be developed by the intravenous injection of smaller quantities than have usually been considered necessary.

The following fluids may be used in order to obtain an antiserum: Defibrinated blood; cell-free serum; albuminous urine; ascitic exudation; corpse blood (which is apt to kill the animal); corpse blood and formalin salt solution; placental serum, and pericardial fluid from a cadaver.

Ewing prefers fresh human blood expressed from the placenta or cord, and defibrinated by shaking in a sterile flask containing beads, to any albuminous exudate. If, however, the other cannot be obtained he advocates using pleuritic or ascitic fluid, but says that albuminous urine is uncertain in its action and often poisonous. Uhlenhuth and Grigorjew used a solution of dried blood. In Germany where this method is employed and the necessity for a standard serum understood and appreciated, suitable antiserum for the testing of blood in criminal cases is provided by the Imperial Board of Health at the State institutions.

The three requisites for antiserum are absolute clearness, absence of opalescence, and prompt action.

Uhlenhuth and Beumer's method of clearing antiserum was to filter it through a sterile Berkefeld filter, having a suction apparatus attached. The serum drips from this filter into a test tube in the suction bottle, about 40 c.c. of serum being filtered in from 10 to 15 minutes.

Any opalescence in the antiserum may lead to grave error, for the addition of such serum to blood solution will produce marked cloudiness, resembling specific reaction; and that this is due to the serum can be proved by the fact that the same effect is produced by addition of this serum to physiological salt solution when, as in true specific clouding, a slight amount of deposit will, after a certain time, sink to the bottom of the tube, and on shaking the tube this sediment will ascend in the form of a faint, flocculent cloudiness.

The most important requirements in the practical use of antiserum for medico-legal use is, that it should cause prompt reaction. Hence the necessity of exactly determining its potency by a regular standard. Specific clouding should take place at room temperature very shortly after addition of the serum and be so apparent that even a layman could entertain no doubt as to the fact that reaction was taking place. In 20 minutes, at latest, reaction should be complete.

With an antiserum of this order, if 1 part of the serum be added to 20 parts of the specimen blood extract in a solution of 1 :1000; 1 : 10,000; and 1 : 20,000, respectively, reaction should be distinctly apparent almost immediately in the first, after 3 minutes in the second, and after 5 minutes in the last instance, with precipitate at the bottom of the tubes, care being taken not to shake the tubes.

With this high potency antiserum the blood extract in physio-

logical salt solution must be highly diluted in a proportion of about 1:1,000, which may be confirmed by the appearance of a very slight albuminous clouding after boiling and adding a few drops of nitric acid. With this quantitative formula and a time limit, heterologous clouding, which may sometimes be observed in highly concentrated solutions of other bloods, is absolutely inhibited.

Weidanz considers that one great value of this method is, that the smallest quantity of material can be tested. By the capillary method advocated by Hauser, Uhlenhuth and Carnwath, the test can be made with a 1,000,000 of a c.c. of blood.

In medico-legal work Uhlenhuth advises testing the blood solution with the different antisera until a positive reaction is obtained. Nuttall warns against adding different antisera in succession to the same blood specimen; for as no time limit is observable for the reaction of any of the other antisera, a "mammalian reaction" caused by the first may be attributed to the last, or serum concentration due to the adding of several antisera will mask the reaction.

Controls. Uhlenhuth made his control tests on material as far as possible of similar age, and dried sterile blood in various kinds of Petri dishes and stored the dried scales in test tubes, but Nuttall used filter paper, immersing it in the blood serum, avoiding the blood clot, and hung the strips of paper up to dry in the air or in a moderately warm, dry place, leaving a dry end on which he noted in pencil the date of the blood and other particulars. Great care was taken to avoid letting the strips touch each other, especially when moist.

Graham Smith and Sanger, in making their tests of suspected human blood stains, had at least two tubes of the blood extract, to one of which was added anti-human and to the other anti-ox or some other antiserum. Frequently several controls were employed, normal rabbit, anti-horse, anti-ox, anti-sheep, anti-dog, and turtle sera. If human blood was present, clouding with precipitate was observed.

Occasionally very faint cloudings and traces of deposit occurred in the controls to which mammalian antisera had been added, indicating the "mammalian reaction" of Nuttall, who showed that the precipitating antiserum produces reaction in the blood of closely related species, particularly if of high potency. These cloudings, however, are slight.

Precipitates differ, some being flocculent and occupy more space, while others are more compact; but the same kind of precipitate is formed by the same serum.

Preliminaries to making tests. In order to test blood it is necessary to make an extract of it for chemical and biological tests. This is done by scraping off the blood, if on a hard surface, or cutting out the stain, if on a textile or other fabric, and placing it in some solution. Salt solution is generally conceded to be preferable to soda

solution in making extracts of blood for medico-legal purposes. If an 0.85% salt solution is not effective, for some reason, in obtaining an extract, Emerson recommends a solution of potassium cyanide, the extract thus obtained to be rendered nearly neutral by carefully adding to it a solution of tartaric acid, and then diluting the extract with salt solution. By gently blowing through a pipette the presence of serum may be demonstrated by the formation of bubbles which tend to persist, as shown by Nuttall. This is called the "foam test," and it is more reliable than the color test of Uhlenhuth and Ziemke. Some blood stains are more difficult to extract than others, especially if of long standing. When exposed to a temperature of 110 deg. C. to 116 deg. C., blood becomes less soluble, while at a higher temperature it is more soluble. A 10% solution of sodium or potassium carbonate is recommended as a good solvent for heated blood.

Blood stains dried on filter paper in tropical countries gave no reaction in some cases when sent to a temperate climate, even after 24 hours in salt solution; in others, they gave full or weak reaction, possibly because dried at a lower temperature. Some writers think that the action of precipitins is merely retarded by moderate heating, but not destroyed, some even finding a trace of reaction on heating to 60 or 70 deg. C.

Ammonium or magnesium sulphate, or NaCl., which are used to separate precipitins do not destroy their action.

In the case of rust mixing with the blood on steel or iron, through exposure to the air, the rust and stain should be scraped off together and placed in distilled water until the blood dissolves when the particles of iron can be strained off, leaving the blood in solution to be tested. When the stain cannot be cut out, or scraped off of a fabric or material, an imprint may be obtained by placing on it a piece of dampened blotting paper, and if the stain is not too old the impression thus obtained may be of some value in a chemical test.

Fresh blood should be diluted with 100 parts physiological salt solution, and the solution allowed to stand until it is perfectly clear. If it be on the surface of a fabric, it can be scraped off, if necessary with the surface of the goods, into a small test tube, and a few drops of water added to dissolve the blood. If it has soaked into the material, it should be cut out and soaked in a few drops of distilled water. In both cases salt solution should be used to dilute the extract.

Stains simulating blood stains. Stains of iron rust occasionally resemble dried blood, but their nature can be determined usually by the microscope. Stains from vegetable dyes, extracts of tan bark and of logwood may all produce stains resembling dried blood, but these may all be tested with chemicals, while tobacco, fruit and other vegetables will reveal through the microscope the presence of their

characteristic cells. Grease stains can be absorbed by blotting paper on which a hot iron is pressed. Red paint can usually be identified, for water has not the effect on it that it has on blood.

Different kinds of leather affect the reaction, although the solutions can all be neutralized and a satisfactory test obtained, except in the case of thick, polished yellow leather, which does not permit of any specific test. Should the blood be sufficiently thick on the surface it may be scraped off, but this is the only way of testing it when found on this kind of leather. Chamois leather is slightly alkaline, suede kid slightly acid, while coarser leathers are markedly so. The shoe blacking on shoes seems to make no difference in the test, and although it is hard to identify blood stains on shoes, well-marked reaction may be obtained if a suspected stain be neutralized and filtered.

In order to avoid serious error, the marked acidity or alkalinity in the solutions of certain articles should be recognized, as either of these properties will interfere with normal reaction, and this effect should be neutralized. It has been proved that the amount of lime in ordinary earth does not seriously interfere with the precipitable elements of the blood, but lime alone will destroy blood, and a superabundance of chalk, lime, or mortar in the earth will diminish, or utterly destroy the action of precipitins. When serum is added to ordinary earth solution a slight clouding may appear, due to lime salts; but this can be neutralized with CO_2 and the solution filtered, and reaction will not be hindered.

Extracts of blood stains on paper, stones, flint, slate, coal, cork, string, straw, rubber, linoleum, silver and copper coins, also wall paper, gave satisfactory results.

Blood stains on steel, from 5 months to 28 years old, on razors, a knife, a hatchet, pocket knives, a dagger in a sheath, and a chopper, when extracted, all gave marked precipitin reaction in from 5 minutes to one hour. All responded more or less markedly to the foam test. These tests were made with anti-human rabbit serum.

In textile fabrics, such as lining, marked cloudiness was observed in one hour's time; on alpaca dress goods the stain gave immediate reaction; woolen braid gave only slight reaction in one hour, the same with black repp goods; cotton material, evidently washed, gave a slight cloudiness in 5 minutes, which did not increase in an hour's time; hair gave clouding in 30 minutes: all these and a blood stain on printed paper were from 3 to 28 years old, respectively. Rabbit serum was used as in the former cases. With anti-human ox-serum they all gave reaction in from 15 minutes to one hour, except the cotton goods.

Blood stains on black dress goods, glace silk, serge, sateen, tweed, furniture serge and a pillow case, on a silk handkerchief, green vel-

veteen, dark green cloth, and coarse flannel, all gave marked reaction with a large precipitate. Coarse duster and brown canvas, as also the silk handkerchief, gave an opalescent solution, and the two former medium reaction with a large deposit.

From the varying reactions frequently observed, Graham Smith and Sanger were led to believe that there was something in the composition or dye of the fabric that might produce these varied results. But if this fact is proved it is easy to neutralize the effect of a special material, whether acid or alkaline, before making the test.

A piece of the material without the stain may be tested previous to testing the blood-stained portion.

To still further establish the fact of precipitin reaction, Uhlenhuth experimented on blood stains of the origin of which he was ignorant, and correctly diagnosed human blood in a number of cases, among others, blood stains on a club; blood mixed with sand, 5 years old; blood on the slit of a pair of trousers in a case suspected to be one of rape, but which proved on further inquiry to be due to another cause; blood on an axe handle, one year old. He also made a correct diagnosis in the case of pig's blood on a cloth, many years old; of dried pig's blood, 4 years old; and of a mixture of pig's and sheep's blood 12 years old. Anti-human rabbit serum caused a precipitate to form in solutions of dried human blood and albuminous human urine, and gave a slight reaction in the blood of three anthropoid apes, but none in the case of the blood of horse, ox, sheep or pig.

The following cases are cited by Uhlenhuth to prove the practical forensic value of this method.

1. A butcher who was arrested for a triple murder and robbery maintained that the blood stains on his shirt sleeves were the result of having slaughtered a calf. By means of the precipitin test, it was positively demonstrated that the stains were human blood. As the testimony against him was overwhelming, and was confirmed by the findings of the blood test, he was sentenced to death. Shortly before his execution he made a full confession.

2. The defendant in this case declared that the blood stains on his trousers were cow blood. The precipitin test, however, proved that they were human blood. After falsifying facts for some time, he finally confessed and acknowledged that he had worn the same trousers when he committed the murder.

3. Blood stains found on the blouse of a man suspected of murder and robbery were found by the precipitin test to be human blood, in spite of his protestations that they were caused by fresh meat. In face of this testimony, the defendant acknowledged his guilt and confessed that they were human blood stains.

4. The defendant in this case insisted that the blood stain inside his pocket was rabbit blood. After obstinately holding his ground for some time he made a full confession, thus confirming the result

of the precipitin test, which had demonstrated that the stain was human blood.

To obtain an antiserum three methods of injection are employed—the subcutaneous, the intravenous, and the intraperitoneal.

Subcutaneous method. This method has fallen into disfavor, as it was found to produce necrosis of the tissues, causing abscesses. It was formerly employed by Uhlenhuth and his colleagues, and by many other experimenters.

Intravenous method. Intravenous injection is apt to kill the animal. Uhlenhuth made an estimate of the minimum lethal dose that may be intravenously injected, but the individuality of the animals has to be taken into consideration, for one cannot stand what might not injure another. Uhlenhuth's estimate was based on the weight of the animal. Sutherland obtained good results from intravenous injection of 1:5 to 2 c.c. per kilo of weight every third day, bleeding the animal on the sixth day after the third injection. For intravenous injection the marginal vein of the rabbit's ear is chosen, but if the animal is small the vein will be too small to inject. The animal is crouched on the table with its head towards the operator. Its eyes are covered and its head steadied by an assistant, as also its body if necessary.

Intraperitoneal method. Intraperitoneal injections are easier to give, but require more serum than the intravenous method. It is, however, generally considered one of the best and safest methods, and is used by most operators. After the rabbit's belly has been thoroughly lathered and cleansed with lysol soap, an area of 5 cm. square should be shaved. With a scalpel a puncture is made in the skin and through this puncture the blunted needle of the syringe slowly bored through the abdominal parietes and the injection made. As soon as the needle is withdrawn the wound is sealed with a drop of compound tincture of benzoin. Great care should be observed so as not to wound the intestine. Another way is to use a bent needle with the eye on the convexity, and to thrust this into a pinched-up fold of the animal's abdominal wall. The needle point should of course be blunted.

Weichardt obtained an excellent antiserum after 5 daily injections of 1 c.c. blood mixed with 0.5% of its volume of phenol, the animal being bled on the eighth day. Uhlenhuth made the injection every 6 to 7 days; Nuttall every fifth to seventh, the dose having been gradually increased when it could be done with safety.

Too large doses at first, instead of hastening, rather retard the development of the immune body. If, however, the precipitating power should be at all above what acts on 1:1000 dilution of homologous serum, the animal is not likely to improve by receiving more injections, and should be fully bled.

Testing the power of antiserum. The blood is collected in a

U-shaped capillary tube, the contents centrifuged, thus collecting the cell elements at the bend of the tube. The supernatant fluid is then removed and tested.

An absolutely unobjectionable antiserum being now obtained, the precipitin test may be carried out with the aid of all the prescribed controls, if desired, although they are chiefly valuable as confirming the findings of the precipitin test when reaction is absolutely nil. Uhlenhuth asserts: "In every criminal case, the usual precipitin reaction should be tested by the well-known formula; if there be positive reaction, any special control is superfluous, as there is no room for doubt. The Neisser-Sachs reaction (complement deviation test) may, however, be tested to confirm, by a method founded on the same principle, but through color reaction, the presence of what had already been made evident as precipitin formation." (Deutsche Med. Wochenschr. Vol. XXXII, 1906, p. 2073.)

When asked by Neisser and Sachs what he would do in a criminal case if the precipitin test were negative, and the anti-hemolytic reaction positive, Uhlenhuth replied that, in that case, he would under no circumstances make an assertion as to the origin of the blood stains.

The only positive assurance that the stain is of human blood is, when an approximately similar reaction promptly results in the suspected blood solution and in the human blood control, the rest of the control tubes remaining perfectly clear. Should the blood solution and the human blood control show no reaction, it is not a question of a human blood stain. Uhlenhuth's experiments proved, to his satisfaction, that, when all other tests failed, it was possible by this biological test to produce albuminous reaction. Together with Beumer, he obtained reaction in putrid blood that had been kept in a test tube for 2 years.

Blood serum and coagulation. In the process of coagulation, as the fibrin slowly contracts it expels the blood serum at the end of about 15 or twenty minutes, the process lasting perhaps several days if the temperature is sufficiently moist. As the serum is expelled the blood corpuscles solidify into a clot, the serum forming around it a clear yellowish margin. It is this serum which gives us the reaction in a biological test and enables us to distinguish human blood from that of any other animal, the blood clot and the serum taken together having established the fact of its being a blood stain of some kind.

As a blood antiserum will cause reaction in other albuminous fluids of the body—except the crystalline lens of the eye—the first essential is to find out if the stain is a blood stain, and this being determined by a preliminary test, such as the guaiacum test, or by Richter's peroxide of hydrogen reaction, and by Teichmann's hemin test, and the spectroscope, if necessary, the next step will be to de-

termine its human origin by the precipitin test. In examination for medico-legal purposes, the sole interest is in the specificity of the test, and the entire reaction should be over within twenty minutes, at room temperature, as a slower reaction is of no value in forensic cases.

Hauser and Ziemke utilized seven or more tubes, containing respectively: (1) stain extract alone, in salt solution; (2) stain extract plus antiserum; (3) a solution of human blood alone; (4) a solution of human blood plus antiserum. The remaining tubes contained solutions of other bloods, plus antiserum.

Hauser preferred salt solution in making his extracts. As the material to be examined is frequently very small in forensic cases, he also advised using capillary tubes, and these should be new, and in addition be cleared by boiling a small quantity of distilled water in them, and then examined with a lens to see that they are perfectly clean. They are then filled by capillary attraction to from 2 to 5 cm. with the respective solutions, then moistened and carefully dried and the tubes laid on a glass slab, the filled ends projecting over the edge. A drop of the antiserum is then brought on to a carefully polished, sterilized slide, inclined so that the drop may run to its edge, which is then brought in contact with the end of one of the capillary tubes on the slab. The tube should be almost horizontal and the slide tilted so that the drop of antiserum may be drawn instantaneously into the tube without permitting an air bubble to intervene between it and the solution in the tube. The position of the tube is of importance, as if it be perfectly horizontal too much serum will flow into it, and if too upright some of the solution will escape on to the slide. After carefully drying with tissue paper, the end of the tube is sealed with plastiline. A fresh slide and a fresh drop are required for each capillary tube.

There is presently observed, even at room temperature, a ring of cloudiness at the point of contact of antiserum and blood solution, gradually becoming more noticeable and extending up into the solution. Then a precipitate forms, the antiserum and supernatant fluid remaining clear. Should it be necessary one can discern with a lens between mere vapor on the outside of the tube and the specific clouding, and between possible specks of dirt and the true precipitate.

Emerson finds that a dilution of 1 part of antiserum to 100 parts of human blood will give the best results, and if the test specimen be small 1 part to 50. In the first instance the precipitate does not form for $1\frac{1}{2}$ to 2 hours, and if the material is old and small 6 to 12 hours may be necessary, at 37 deg. C.

As a high potency antiserum may produce considerable reaction in related, or even distantly related bloods, a control tube containing homologous blood in a dilution approximately equal to that of the specimen blood to be tested would prevent any error in this regard.

On the other hand, a very weak antiserum might lead to error in inducing a negative diagnosis, even if homologous blood be present.

Fluid sera used for qualitative measurements, unless tightly stoppered or sealed, would become concentrated through evaporation and lead to error in testing.

Heating an undiluted serum beyond 60 deg. C. diminishes its power of producing precipitins; this quality is completely destroyed by heating it to 68 deg. C.

Preservatives of antisera. According to some of the best authorities, fresh antisera may be kept for years without diminishing their potency, if kept at a temperature of 5 deg. C., and may even be thawed out as required and frozen again. Drying is not so satisfactory, according to Nuttall, who found that dried serum, when dissolved in physiological salt solution, produced cloudiness. However, he dried serum on filter paper with good results. Chemical preservatives are recommended by some, but experienced operators, particularly Nuttall, do not advocate anything but strict asepsis for the preservation of antisera in temperate climates where, if preserved in sterile capillary tubes on being freshly collected, and then flame-sealed, it will keep good for 5 years. In warm climates freezing may be necessary.

Graham Smith and Sanger collected their blood in a large sterile Petri dish, which is tilted as soon as the blood clot forms. The serum that exudes from the clot is drawn up into small tubes about 5 c.c. in diameter and 10 c.c. long, with the ends drawn out to fine capillaries. When full they are sealed and the tubes stored in an upright position. A few drops of the antiserum may be removed at any time and the tubes resealed. They keep in the light at room temperature as well as in the ice-box and in the dark.

Filter paper was used by Jacobsthal and W. Richardson to preserve antiserum, and v. Eisler used black filter paper, placing 1 c.c. of antiserum on each slip, and then dried the slips in the thermostat at 36 deg. C. for 2 to 4 hours, and then kept the slips in a cool, dry place. In making the test he put the paper containing the serum into the serum solution or stain extract, and shook the tube to hasten reaction. Black paper shows up any turbidity that may be produced.

Uhlenhuth considered phenol, in a proportion of 1 part to 5 of antiserum. a good preservative, and also used chloroform; but Nuttall found the latter to produce cloudiness in the antiserum.

Filtration. Stone filters, when new, are liable to exert a certain action on serum first filtered through them, but this effect presently wears off. As the filter becomes choked, however, the precipitin forming property of the serum rapidly decreases. Graham Smith and Sanger found that the precipitating power of normal sera is diminished by filtration through a Chamberlain filter, but not by passage through a Berkefeld filter.

Spontaneous precipitation. This is liable to occur and should be guarded against by the addition of about 6% to 8% of salt.

Effects of acids and alkalies, etc. The following acids affect reaction: acetic, citric, lactic, oxalic, and tartaric acid when present in a proportion of 5 to 1000 parts; also ammonia, caustic potash and caustic soda, although a certain amount of reaction will be obtained if the stain extract be rendered neutral. The inhibitory action of calcium chloride, the sulphates of copper and iron, chloride of mercury, permanganate of potash, of sodium bisulphide and of zinc chloride cannot be nullified.

Effect of heat. Blood if exposed for one hour to a temperature of 130 deg. C.; for 20 minutes to 140 deg. C., and for 10 minutes to 150 deg. C., or from 5 to 10 minutes to 160 deg. C., will give no reaction. The presence of sulphuric acid, or of carbon bisulphide, according to Mattei, will interfere with reaction, and even 1 to 1,000,000 of permanganate of potash will prevent reaction.

Precipitoids. Antiserum is said to contain "precipitoids" when it has lost its precipitating property, through heat or spontaneously; and by combining with certain precipitable substances hinders the action of fresh serum, thus acting as an antiprecipitin.

It is particularly essential in the medico-legal employment of serum that the precipitable substance should not lose its susceptibility to the precipitin, which is the case when the albuminous molecule is dissociated and loses its receptor for the precipitin.

Testing the immune power of antiserum is carried out by means of known dilutions of homologous serum.

Complement deviation test. This test, to which Uhlenhuth referred, was advocated by Neisser and Sachs, but it is more complicated and harder to carry out than the precipitin test, and for this reason is not so practical for our purpose. It is also called the complement fixation method.

Uhlenhuth devoted a great deal of time and attention to this method, and gave it as his opinion that, although it might be of great value in laboratory experimentation, it was not practical for medico-legal use owing to the almost imperceptible mistakes that might arise, and the extreme difficulty of carrying out the test.

Progress of Diagnosis and Prognosis

GENERAL METHODS OF EXAMINATION—SYSTEMIC AFFECTIONS—DISORDERS OF GENERAL METABOLISM—INFECTIOUS DISEASES

Coagulation Time of the Blood in Disease—T. ADDIS, Edinburgh Med. Jour., July, 1910.

Author has found that in 70 per cent. of various morbid conditions which he investigated, the coagulation time was found to be normal. There seems to be no connection between leucocytosis and coagulability. In bacterial diseases no marked effect is produced on the coagulation time unless the organisms are actually present in the blood. When this occurs in typhoid fever and pneumococcus infection, the coagulation time is increased. Streptococci and staphylococci in the circulating blood retard the coagulation time. Moderate loss of blood has no effect on coagulability, but very large hemorrhages are followed by an acceleration of the coagulation time.

SACHS.

A new Method for the Determination of Urinary Glucose—K. A. HASSL-BALCH and J. LINDHARD, Biochem. Zeitschr., Vol. XXVII, p. 273.

The new method depends upon the fact that a solution of safranine when being heated is reduced by grape sugar. The deep-red color of the solution becomes yellowish or slightly yellowish-red. The reaction may be utilized for the quantitative determination of urinary glucose. This method has the advantage over those commonly employed that a previous removal of albumin is unnecessary, and that the "autoreduction" of the urine does not need to be taken into consideration. Uric acid and creatinin do not reduce the alkaline solution of safranine. The determination by safranine indicates the same physiological amounts of urinary glucose as do the older methods. The reagent never deteriorates when prepared in suitable concentration, but it has to be standardized by means of a glucose solution of known percentage.

WESTERN.

Quantitative Albumin Estimation according to Tsuchiya—O. SCHIEMANN, Zentralblatt f. innere Medizin, 1910, No. 31.

Tsuchiya's method (Archives of Diagnosis, Vol. I., pages 192 and 297) does not give any more accurate results with urines containing moderate amounts of albumin than does the Esbach reagent.

In the presence of large quantities of albumin, i. e., when there are amounts above 6 per mille, Tsuchiya's method is superior to that of Esbach. For the determination of very small amounts of albumin Tsuchiya's method is inferior to Esbach's. For the examination of transudates and exudates neither method can be utilized. Generally speaking the method of Tsuchiya possesses no especial advantages over that of Esbach. WESTERN.

An Aid to the Diagnosis of Malignant Disease—E. M. ROYLE, Lancet, Aug. 13, 1910.

Author states that in cases of cancer, the uric acid output in the urine is increased when compared with that of healthy individuals, and the output of phosphates in the urine is decreased. The ratio of phosphates to uric acid is almost invariably reduced in malignant disease below that found in health. Any ratio below three is almost diagnostic of malignant or blood disease, unless future work shall prove this to be so in other conditions. SACHS.

Study of Mistaken Diagnoses—R. C. CABOT, Jour. A. M. M., Oct. 15, 1910.

Author summarizes and concludes: Never make a diagnosis of uremia in a patient seen for the first time in an acute illness charac- terized by coma or convulsions. Never make a diagnosis of ptomain poisoning without definite chemical evidence (in other words it can never be made, Ed.). Make no diagnosis of hysteria, neurasthenia or psychoneurosis in a patient whose symptoms begin after the forty- fifth year. The actual diagnosis is likely to be arteriosclerosis, hy- perthyroidism, dementia paralytica, or pernicious anemia. Diag- noses of tertian malaria in patients whose symptoms resist quinin more than three days are almost invariably wrong. Bronchial asthma beginning after 40 usually spells heart or kidney disease. Epilepsy beginning after 40 usually means dementia paralytica or cerebral arteriosclerosis. Typical migraine is often a symptom of unrecog- nized brain tumor or chronic nephritis. Most cases of "bronchitis" mean tuberculosis, bronchopneumonia or multiple bronchiectasis cav- ities. Aside from the immediate results of acute infections (such as scarlet fever, diphtheria, tonsillitis and pneumonia) "acute" nephritis usually turns out to be chronic. Acute gastritis and gastral- gia usually mean appendicitis, gall-stones or peptic ulcer. Pus in or near the liver is often mistaken for serous or purulent pleurisy, for it produces identical signs in the right chest posteriorly. An X-ray of the shin-bones may give the first hint of an active syphilitic process in the joints or internal viscera. Systolic or presystolic murmurs, heard best at the apex of a markedly enlarged heart, rarely mean valve lesions. Diastolic murmurs at the base of the heart are very

uncertain evidence of aortic disease unless there are characteristic jerkings in the peripheral arteries. Myorcarditis is a diagnosis which should never be made clinically. Cerebral localization applied to tumors, hemorrhages and the like is still in its infancy. The clinical diagnosis of the so-called diseases of the blood is the easiest and safest in medicine.   .   WESTERN.

Immediate Microscopic Diagnosis of Tumors at the Time of Operation— E. H. SHAW, Lancet, Sept. 24, 1910.

The selected piece of tissue, received from the surgeon, is placed on the brass disk of the freezing microtome and is surrounded by gum solution. The tissue and gum are then frozen and sections are obtained by a razor on a carrier. The sections are placed in a dish of cold water, and a suitable section selected. It is then dipped for a moment into pure methylated spirit, and then placed into another larger dish of cold water. The currents set up by the spirit in the water cause the section to spread out flat. The section is then transferred to a glass slide by slipping the latter under the section in the water, and the excess of water is drained off. A few drops of Löffler's methylene blue are allowed to fall directly on the section. The excess of stain is pressed out by a cover glass. The specimen is then ready for microscopical examination.   SACHS.

Examination of Serous Cavities by Cystoscopy—H. C. JACOBUS, Münchener med. Wochenschr., Oct. 4, 1910.

If a transparent medium is introduced into the abdominal, pleural or pericardic cavities, they may be inspected by means of a cystoscope without any danger. The examination is accomplished as follows: A small incision of the skin is made first, then a trocar is introduced into the cavity to be examined; following this filtrated air is blown by means of a Politzer air-pump, which has been connected with the trocar, into the cavity; the cystoscope is then introduced through the trocar. The examination of the serous cavities performed in this manner gives generally satisfactory results.
                                        MILL.

Clinical Studies concerning Orthostatic Albuminuria—G. TURRETINI, Revue méd. de la Suisse Romande, 1910, No. 9.

A review of 10 cases of orthostatic albuminuria which were closely observed by author. Lordosis of the lumbar spine proved to be the most important etiological factor in most of the cases. Two groups of the affection must be differentiated. In the first group there exists an essential orthostatic albuminuria, and an organic renal lesion cannot be demonstrated. A subdivision of this group consists of cases in which the albuminuric condition is due to a floating kidney.

The second group of orthostatic albuminuria arises on the basis of a latent or an already unconcealed organic disease of the kidneys. The type of orthostatic albuminuria should be determined in every case by all the diagnostic means at our disposal.   ZIMMER.

Uric Acid Excretion in Gout and Articular Rheumatism—H. v. HÖSSLIN and K. KATO, Deutsches Archiv f. klin. Medizin, Vol. XCIX, Nos. 3 and 4.

The metabolic experiment (injection of sodium nucleinate and a purin-free, uniform diet) evinces in most cases whether arthritic diseases are of a rheumatic or gouty nature. When muscular rheumatism or the various types of articular rheumatism are present, there does not exist an anomaly of uric acid metabolism.
          WESTERN.

Hypothyroidism—R. L. PITFIELD, N. Y. Med. Jour., Aug. 27, 1910

Hypothyroidism is a disease of many symptoms; its manifestations are so widely divergent, that the attendant has to be familiar with neurological and gynecological practice, and with diseases of the ear. Many of author's patients have seen specialists, some for their dyspnea, some for their hearing, and some for their amenorrhea. All had taken sodium salicylate, some had been treated at Hot Springs. Many obtained relief by massage. Two women, one all but deaf, the other miserable from tinnitus, had their hearing restored so that it was all but perfect merely by taking thyroid extract. From the dermatologist to the heart specialist they had wandered, leaving only the general surgeon alone. It is as often misdiagnosed as rheumatism. Author has seen nine cases with very discrepant symptom-complexes, but all had several things in common. All had given birth to children; all had joint pains that were called rheumatism. The fat ones were all thought to have Bright's disease, the thin ones nervous prostration. Any woman approaching middle life or in the fourth decade, who has had a history of backache, an occipital headache, together with joint pains, dyspnea, asthenia, should be suspected of having hypothyroidism, especially so if she has amenorrhea or had had it during the menstrual life. The symptom most commonly complained of, and that bitterly, is the occipital headache, which is present often, a great deal of the time also giving way of the knees, dyspnea, subnormal temperature.   WESTERN.

Malignant Tumors of the Parathyroid Glands—BARNABO, Il Policlinico, 1910, No 3.

The symptoms of a case consisted in the main of compression phenomena in vessels and nerves. Ptosis palpebralis dextra and myosis of the pupil were present. Specific reduction of thyroid or parathyroid activity was not noted.   ZIMMER.

Rachitis—J. W. VAN DERSLICE, Jour. A. M. A., Oct. 15, 1910.

The child is restless and fretful; the sleep is disturbed; there is some temperature elevation, especially at night; with this there is the tendency to profuse perspiration about head and face. There is a general tenderness; flatulence and large foul-smelling movements, with either diarrhea or constipation, are frequent. This group of symptoms antedates any bone changes that are clinically demonstrable; soon, however, the beading of the ribs and the horizontal depression just below the nipple line may be noted; later on the wrists, knees, and ankles enlarge. The enlargements of the ends of the long bones follow certain definite rules and it is found that such bones as are active during their active growth show the greater deformity. The shape of the head is often characteristic. The bones become flattened and the general appearance is that the head is large but does not simulate the hydrocephalic head, in which there is bulging rather than flattening. The bony prominences are thickened. The head shows other characteristics—the veins on the forehead stand out prominently; the fontanel bulges and is unduly open; the frontal suture in cases occurring early is open. Craniotabes is not a frequent accompaniment of rachitis. There is general muscular flabbiness and weakness. The patient may be fat and plump, but the muscles feel lax and flabby. It is to this condition of the musculature that many of the deformities may be attributed, as kyphosis, scoliosis, knock-knee and talipes. Convulsions, tetany and laryngismus are more prone to occur in the rachitic. Tenderness, irritability, restless sleep, head rolling are common to the disorder and may be attributed to a nervous system rendered unduly irritable by the dystrophy. The lymph glands are generally palpable all over the body and in the prolonged and exaggerated cases the spleen is also enlarged. Dentition may be delayed or irregular. The teeth are more apt to decay. The blood shows constant findings simulating chlorosis. There is a tendency toward catarrhal disorders. All mucous membranes are prone to inflammation and many disorders of the upper respiratory tract, bronchitis and bronchopneumonia are encountered.   WESTERN.

Obesity of Adolescence—HEINRICH STERN, Berliner klin. Wochenschr., July 25, 1910.

In some cases of obesity of adolescence the obesity declines toward the close of the second or at the beginning of the third decennary of life, while in others it continues to exist after attainment of maturity. This circumstance seems to be of etiological importance. The cases of obesity abiding after individual development author classifies among the "metabolic," and as "transitory" or "specific," he designates those which subside with the approach of adult life. The origin of the metabolic form occasionally antecedes the period

of puberty. A fat child of six or seven years may retain its corpulency during after life. In other instances, the child may have been stout before the seventh or eighth year, and from then on may have declined in weight and rotundity until the age of puberty was reached. Although there may be an inclination to stoutness in a number of children, metabolic obesity usually does not set in before the tenth or twelfth year. The transitory form always makes its appearance with the approaching state of puberty, and, as it again vanishes during or at the close of adolescent life, it may well be termed the specific obesity of adolescence. Metabolic obesity of adolescence is nothing else but a juvenile modification of that what the author has described as metabolic obesity in the adult. Under the latter form is understood that condition in which obesity concurs with a normal or slightly subnormal degree of body-density. The methods which author employs in determining the volume-weight of the living organism were published in an article on "Investigations upon corporeal specific gravity, and upon the value of this factor in physical diagnosis" (Med. Record, Feb. 9, 1901), and in another article "On the treatment of obesity" (Jour. A. M. A., Feb. 15, 1902). Transitory obesity of adolescence, on the other hand, is a specific condition whose occurrence is limited to the latter period of life. There is little doubt that transitory obesity of adolescence is caused by certain metamorphotic anomalies incidental to pubescence and disappearing before or at the completion of systemic development. Most cases of transitory obesity run an uneventful course. Anorexia, chlorosis, constipation, headache, and dull pains in back and loins are often present; a sense of rigidity in the joints and sacrolumbar region, giving rise to ungraceful and awkward motions, is not uncommon; circulatory disturbances synchronously produced with transitory obesity or appearing during the course of the latter, are not very frequent and seem comparatively slight; however, pre-existing anomalies of the circulatory apparatus may occasionally become decidedly aggravated after abnormal fat deposition. In severe cases one may meet with pronounced anemia and leucocytosis; and in rare instances with vertigo and cardiac dyspnea. The specific gravity of the blood and consequently that of the body are not pathognomonic of the condition. That is, they do not as a general rule differ materially from those in metabolic obesity of adolescence. The excess in absolute weight in transitory obesity of adolescence amounts on the average to about 25 or 30 per cent. It may, however, vary a good deal in different cases. MILL.

Idiopathic Acidosis in Children—J. G. SHARP, British Jour. of Children's Diseases, Oct., 1910.

Author uses the term idiopathic acidosis because in the cases described he could find no anterior condition to account for the acidosis. On entering the room of a patient suffering of idiopathic

acidosis, one is impressed by the peculiar sweet odor of the breath. The patient is often in a drowsy or semi-comatose condition, but rouses up when attacks of vomiting come on. Vomiting is a prominent symptom, the patient is not able to keep anything at all in the stomach. Headache and thirst are complained of. Respirations are frequent and there is loss of appetite. As a rule, the temperature is not high at first, but in the later stages of the condition, the temperature may reach 103 deg. F. The bowels are constipated, the urine is scanty, but always contains acetone and often diacetic acid. No sugar is present in the urine. In mild cases the symptoms pass off in twenty-four to forty-eight hours. Idiopathic acidosis is only to be diagnosed when, after a searching examination, no cause can be assigned for the acid intoxication. Fatal cases of acidosis appear to terminate in from a week to eight or nine days.   SACHS.

Theoretical Consideration of the Wassermann Reaction and its Practical Application—D. M. KAPLAN, Am. Jour. Med. Sciences, July, 1910.

Not only syphilis, but many other conditions give a positive Wassermann reaction. It is not, strictly speaking, specific for syphilis. It is also not specific in the sense of Ehrlich. For diagnostic purposes a negative reaction is of value only when the patient shows signs resembling an initial lesion, or symptoms bordering on this period. Neither the Wassermann nor the Noguchi systems alone are sufficiently accurate for diagnostic purposes. Both systems are to be used. A decidedly positive reaction with both methods is highly suggestive of syphilis even if no direct history of an infection is obtainable. It is of no value to perform the test on sera without acquainting the serologist with the therapy. A negative Wassermann reaction is no indication for cessation of treatment. Results from different workers will have to differ until the technic becomes more uniform.
SACHS.

Practical Value of the Wassermann Reaction in Syphilis—J. GUSZMAN, and E. NEUBER, Med. Klinik, Sept. 4, 1909.

The practical value of the Wassermann reaction consists in the fact that, in certain cases, it has a very important and highly anamnestic significance which often proves confirmatory concerning the diagnosis of the alteration in question. The reaction employed for such cases is already suitable for practical work. The seroreaction, however, cannot exert a significant influence upon the therapeutic method or the prognosis as the experience with it does not as yet permit us to do so. Therapy and prognosis are still entirely dependent upon the exact clinical observation and the rational consideration, based on experience, of every single case.   MILL.

Hereditary Syphilis and the Wassermann Reaction—BERTIN and GAYET, Revue de médecine, 1910, No. 9.

In a series of cases in which the diagnosis of hereditary syphilis seems dubious, for instance, in cases of infantilism, cerebral infantile paralysis, deafmutism, congenital mitral stenosis or in cases in which there exist but few characteristic symptoms, a positive Wassermann reaction will often prove with certainty the presence of hereditary syphilis. ZIMMER.

Corrosive Sublimate and the Wassermann Reaction—H. RIK, Zeitschr. f. Immunitätsforschung, Vol. VII, Nos. 1 and 2.

Sublimate hemolysis is considerably accelerated and slightly augmented by organ-extracts. This effect is in part produced by the lipoids as well as the alcohol. In vitro, the sublimate is without influence upon the course of the Wassermann reaction. On the other hand, large amounts of it, on account of the hemolytic action, may hide a positive reaction. FRY.

Complement Fixation in the Diagnosis of Echinococcus Disease of Man G. BRAUNSTEIN, Wiener klin. Wochenschr., August 4, 1910.

Examinations of the blood serum in vivo of three patients affected with echinococcus disease have demonstrated a distinct complement fixation with 0.4 c.c. antigen. In two patients who had died the reaction was positive in the one case and negative in the other. In three patients who had been operated upon the specific antibodies were still demonstrable with certainty in the serum after the echinococcus cyst had been removed for some time. MILL.

Helminthic Infection and Its Relation to Eosinophilia—J. D. WHYTE, Lancet, July 30, 1910.

The greater the varieties of parasites that infect a patient, and the greater the number of each variety, the greater a degree of eosinophilia is the patient likely to show. Especially is this so if the patient be between 20 and 40 years of age. If the patient be older, or be suffering from some form of tuberculosis, the degree of eosinophilia will not be so marked. SACHS.

An early Diagnostic Sign in Acute Infectious Diseases—GIUNTA, Gazetta degli Ospedali, 1910, No. 62.

In measles, röteln, scarlet, chicken pox, mumps, diphtheria and whooping cough there often ensues in the prodromal stage an enlargement of the cervical, axillary and inguinal glands which permits of a definite diagnosis. Not only saprophytes but also pathogenic germs may be retained in the lmyph glands without causing any constitutional symptoms. This "latent microbism" may lead to the diagnosis of an infectious disease before other symptoms have supervened. ZIMMER.

Acute and Chronic Streptococcal Sepsis—H. STEINERT, Münchener med. Wochenschr., Sept. 13, 1910.

The onset of the affection cannot always be determined. Streptococcal sepsis does not necessarily undermine the general health from the beginning. One of the sequels of the infection may be the first manifestation of streptococcal sepsis. The diagnosis is often connected with great difficulties, and is occasionally made only after death. In some cases arthritic pains are the first symptoms. In one of the author's cases there was no other symptom besides a lasting pain in one of the hip-joints which could not be subdued by all therapeutic endeavors. In some cases the infection evinces itself by vague symptoms of a general nature; the patien s generally consult a physician after these symptoms have lasted for some time. Such patients complain of general weakness, loss of appetite, some headache, occasional vertigo, comparatively frequently of sharp pains in the chest, and dry cough. Sometimes a sensation of mild chilliness or fever are noted among the earliest symptoms. Generally speaking the temperature elevation is not very high; it increases exceptionally and for a transitory period only. There may be no fever at all, even if there ensues lethal termination. The temperature curve may resemble that of certain cases of apical tuberculosis. Periods without fever, lasting days and even weeks, may interrupt the febrile process. The general state of nutrition declines steadily, though slowly. The individuals most subject to the affection are those who have had a rheumatic infection, and have taken things easy on account of an old endocarditis. The patients are usually loath to remain in bed. Gradually an anemic condition becomes noticeable. Hemoglobin becomes reduced; the red blood cells decline in number. The number of leucocytes remains about normal. Cardiac manifestations are the most important local symptoms. In most of the cases there exists an old cardiac disease. A new endocarditic process is invariably set up. This is clinically demonstrable in most cases. Old valvular affections become aggravated, new ones appear; to an existing mitral insufficiency an aortic insufficiency is added. Cardiac dilatation gradually increases, and the symptoms of heart weakness make themselves more and more evident. Emboli may be present in any organ. A splenic tumor can as a rule be recognized when infarcts are formed in the organ. If numerous infarcts are imbedded in the spleen the latter may attain considerable size. Author has seen the spleen to extend to the umbilicus and the median abdominal line. Embolic infarcts may also occur in large numbers in the cardiac muscle, in the kidneys and the brain. In some cases there ensues embolism of the larger arteries of extremities and the abdominal cavity. Brain emboli cause the gravest clinical consequences. The joints are frequently affected by the streptococcal sepsis. Mild bronchial phenomena occur almost regularly; in the later stages broncho-pneu-

monic infiltrations may supervene. The background of the eye shows the typical septic changes, hemorrhages and white patches. There is loss of appetite. The patients vomit occasionally. The bowels move irregularly; oftentimes there is diarrhea. Hepatic enlargement, which is the rule, is probably a symptom of cardiac congestion. A mild albuminuria also belongs to the usual symptoms. In most instances there occur but traces of albumin. Besides this the urine also contains some blood. In the urinary sediment there may be some blood cells and a few casts. Oliguria does not ensue until the cardiac weakness is pronounced. Menstruation does, as a rule, not occur during the course of the affection. Lethal termination is the rule. Exceptionally the patients succumb on account of general cachexy; cardiac insufficiency or a grave embolic complication is usually the direct cause of death.   MILL.

Intradermic Injection of Tuberculin—R. MASSALONGO and A. CALDERARA, Riforma medica, Vol. XXXV, No. 49.

According to authors the intradermic injection of Tedeschi and Mautoux is in every respect the most reliable local method for the employment of tuberculin for diagnostic purposes.   ZIMMER.

Significance of the Cutaneous Tuberculin Reaction in Infancy—L. COHN, Berliner klin. Wochenschr., Oct. 3, 1910.

The principal value of the cutaneous tuberculin reaction consists in its diagnostic and prognostic significance in tuberculosis of the nursling. The positive result of the test has no value in older children and adults; the negative result does not definitely exclude tuberculosis when the patients are emaciated and cachectic. Below the third month the reaction is always negative. The tuberculous infection ensues mostly at a very early period of the child's life. It occurs decidedly earlier in children of tuberculous families than when the parents are non-tuberculous. An unfavorable prognosis must be entertained when an infection with tuberculosis takes place in the nursling. Of 18 children which were infected during the first year of life 16 died.   MILL.

Lymph Glands in the Diagnosis of Tuberculosis of the Hip and Lower Spine—A. M. FORBES, Montreal Med. Jour., August, 1910.

The deep iliac and inguinal glands were more often enlarged in cases of spinal than in hip disease. This was especially so in cases of lumbar Pott's disease or tuberculous conditions adjacent to the lumbar region.   STEIN.

Duration of Life of the Tuberculous in a Large City—L. STEINER, Zeitschr. f. Tuberkulose, Vol. XVI, No. 2.

The average duration of life of tuberculous laborers in a large city from the appearance of the first subjective symptoms until death amounts to about three years. Heredity is without prognostic significance in the adult patient. Female laborers succumb to tuberculosis quicker than male laborers. Sanitarium treatment increases the duration of life from one and one-half to two years. Patients from the fourteenth to the seventeenth and from the thirtieth to the forty-ninth year show the greatest resistance. Small hemorrhages are prognostically favorable. Occurrence of eosinophile cells in the sputum permits the conclusion of a longer duration of life.   MILL.

Scarlatinal Eruption—E. RACH, Ziegler's Beiträge z. pathologischen Anatomie u. allgemeinen Pathologie, Vol. XXXXVII, No. 3.

The scarlatinal eruption consists of a typical cellular-serous or cellular-hemorrhagic acute inflammation which has its seat in the upper strata of the cutis and in the epidermis. In the exudative stage efflorescences are formed especially around the openings of the hair follicles; vesicle production is caused by penetration of the exudate into the epidermis. In the stage of desquamation these epidermis portions containing the exudate are shed.   MILL.

Clinical Diagnosis of Typhoid and Paratyphoid—J. MEINERTZ, Beihefte z. med. Klinik, 1910, No. 9.

Relative pulse retardation occurred in one-fourth to one-third of the cases of typhoid; diarrhea was present in 46 per cent. of the cases, the eruption was missing in 24.2 per cent. of the cases. The most important clinical diagnostic symptoms are the diazo reaction and hypoleucocytosis. An associate agglutination of paratyphoid bacilli when there exists no paratyphoid occurs frequently in typhoid fever. The determination of typhoid bacilli in the blood is of import for the confirmation of the diagnosis; author succeeded to find the bacilli in the blood during the first week of the disease in 100 per cent. of all cases examined during the last two years.   MILL.

Epidemic Poliomyelitis—L. E. HOLT, Archives of Pediatrics, Sept., 1910.

The symptoms of the abortive cases of epidemic poliomyelitis, while fairly uniform, are not sufficiently characteristic to enable the diagnosis to be made of these cases when seen by themselves. The onset is usually abrupt, often with vomiting; there is constipation and fever, usually from 101 to 103 deg. F. Accompanying these general symptoms there is very often hyperesthesia, pains in the back and neck and in many some stiffness of the neck is observed. There is general prostration, which may be sufficient to keep the patient in

bed. The duration of these symptoms is usually only two or three days, after which they rapidly subside and the patients completely recover. Occurring sporadically such cases would not be diagnosed. They would hardly be suspected. In epidemics they would be recognized only by their association with paralytic cases. The proportion of abortive cases cannot now be stated, or even estimated. Undoubtedly a much larger number occur in epidemics than the records indicate, for most writers in their statistics have been inclined to exclude doubtful cases, in which group certainly many of these would fall. It seems probable, however, that the number is quite large.

WESTERN.

RESPIRATORY AND CIRCULATORY ORGANS

Röntgen Diagnosis of Miliary Pulmonary Tuberculosis—W. ACHELIS, Münchener med. Wochenschr., Sept. 6, 1910.

The Röntgen picture of pronounced miliary tuberculosis of the lungs is well-known. It presents a diffuse, finely mottled appearance of the not very light pulmonary areas. A few irregular shadows are noted in the picture which shows but few contrasts. Close examination, however, evinces the delicate details of the picture; one almost believes to be able to recognize the individual miliary tubercles. This, however, is not the case. MILL.

Blood Pressure in Infancy—P. WOLFENSOHN-KRISS, Archiv. f. Kinderheilkunde, Vol. LIII, Nos. 4 to 6.

The examinations were made in accordance with the method of Riva-Rocci and von Basch with a cuff 6 cm. wide. The blood pressure increases with the age of the children, their increasing height and body weight. At one and the same age, but in the presence of discrepant body weight, the blood pressure is also discrepant; the same is the case when the height of children of equal age is discrepant. MILL.

Observation on the Bruit heard over the Manubrium Sterni in Children—J. E. H. SAWYER, Birmingham Med., Review, Sept., 1910.

Bruits are very frequently heard upon auscultation over the upper part of the sternum in children when the head is bent back so that the face is horizontal. Author examined 500 consecutive children, the only cases that were excluded being those suffering from cardiac disease. The bruit was present in 65 or 13 per cent. of the cases. This bruit is exactly like the venous hum which is heard in the neck of girls suffering with chlorosis, but is usually not so long and rarely continuous. It always disappears when the head is raised to the erect position. The venous hum over the sternum in children

with the head drawn back appears from observation to be a normal condition in the great majority of cases, and should be considered to be of no importance unless accompanied by physical signs of compression.   SACHS.

Dilatation of the Aorta—T. McCRAE, Am. Jour. Med. Sciences, Oct., 1910.

Dilatation of the aorta considered apart from aneurysm is relatively common and probably occurs more frequently than aneurysm. The two main etiological factors are acute infections, notably rheumatic fever, and conditions which cause sclerotic changes. The symptoms often suggest disease of the heart itself. Dilatation of the aorta rarely exists alone. Symptoms due to valvular disease, especially aortic insufficiency, myocarditis, coronary artery disease, and angina pectoris may be present. The physical signs are often very definite, of which visible pulsation in the upper interspaces, dulness over the upper sternum and adjoining interspaces and the fluoroscopic examination are the most important. When the second sound is present, it often has a distinct quality at the base; a bell-like, ringing, amphoric quality, very distinct when once heard, and quite distinctive from the accentuated second sound found with high blood pressure. The fluoroscopic examination is the most important part of the examination, and in doubtful cases is usually the deciding point. Quoting from Dr. Baetjer: "Dilatation of the aorta is marked by an increase in the width of the aorta. In normal conditions fluoroscopic examination reveals only the bend of the aorta projecting to the left of the sternum and just beneath the clavicle, the ascending and descending portions being invisible behind the sternum. In dilatation there is a shadow projecting to the left of the sternum and extending downward to be lost in the shadow of the heart. The shadow may vary in size and in extreme dilatation may project to the right of the sternum. This shadow persists between pulsations showing there is a true dilatation of the aorta." Pressure symptoms are comparatively common but are rarely severe. The diagnosis can usually be made from aneurysm, and the prognosis is good.
                                                  SACHS.

Cardiac Disturbances—A. PLEHN, Therapeutische Monatshefte, Sept., 1910.

Determination of the size and the form of the heart is absolutely essential for the recognition of a cardiac affection; only after the size and form have been ascertained can the auscultatory findings be adjudged properly. Author dwells upon some phenomena which are usually but little taken into consideration, as, for instance, the abnormal motility of the heart, the psychogenous cardiac affections, reflex cardiac neuroses and edema of the ankles which are frequently of an angioneurotic character.   FRY.

Cardiac Neurosis and Basedowoid—B. ASCHNER, Zeitschr. f. klin. Medizin, Vol. LXX, Nos. 5 and 6.

Cardiac neurosis and basedowoid exhibit a large number of common symptoms; they appear to run into another in some of the cases, and are often mistaken for each other. Among the nervous symptoms common to both affections irritation phenomena of the autonomous nervous system are most frequent in cardiac neurosis, while in basedowoid the irritation symptoms of the sympathetic system predominate. WESTERN.

Paroxysmal Tachycardia arising from two Distinct Foci in the Auricular Tissue in a Single Patient—H. F. MARRIS, Heart, Vol. II., No. 1, 1910.

Author states that paroxysmal tachycardia may be generated from at least two separate foci in the auricular tissue of one and the same clinical subject. SACHS.

So-called "Spontaneous" Gangrene—R. DEXTER, Cleveland Med. Jour., August, 1910.

On examination of a case of spontaneous gangrene, that is, gangrene non-traumatic and non-infectious occurring in healthy men in the prime of life, in the early stages, the affected parts are cold to the touch, pale, or in the dependent position, cyanotic, and occasionally cherry red. This is the stage resembling erythromelalgia. The superficial veins show passive congestion, and when emptied by pressure, refill very slowly. Recurring attacks, resembling phlebitis of these veins due to migratory thrombosis, are not uncommon. Edema is rare. The arteries of the foot and leg are always affected. Early there may be a faintly palpable pulse, but as the process advances this disappears. The dorsalis pedis and posterior tibial are usually the first vessels affected, but in advanced cases, all the arteries of the foot, leg and thigh, including the femoral, may be pulseless. The late stage of the condition is marked by the onset of gangrene, beginning, usually, under the nail or on the tip of the great toe. This, starting as a serous or purulent bleb, slowly goes on to the formation of an indolent ulcer and subsequently to dry gangrene, which may involve all the toes and extend on to the dorsum of the foot. The march of the gangrene is slow, and the line of demarcation almost never sharply defined, the gangrene fading gently into the surrounding engorged cyanotic skin. The reflexes may be increased or diminished depending on the amount of involvement of the nerves accompanying the affected vessels. Disturbances of sensation have occasionally been observed. While the process, at the start, is usually unilateral, sooner or later the other leg is almost always involved. WESTERN.

ALIMENTARY TRACT

Differential Diagnosis between Eventration and Diaphragmatic Hernia—
OTTEN and SCHEFOLD, Deutsches Archiv f. klin. Med., Vol. XCIX, Nos.
5 and 6.

Author compares a case of eventration and diaphragmatic
hernia. In the case of eventration the patient first complained of
abdominal pains six weeks before admission to the hospital and
shortly afterwards of difficult deglutition. Stenosis of the esophagus
was ascertained by passing bougies. The X-ray showed the dome
of the diaphragm pushed high up, without any limitation of its mo-
tility. The stomach and large intestine were likewise displaced up-
ward. The longitudinal axis of the stomach was vertical, and the
cardia so displaced that a kinking with the esophagus followed. It
was only possible for liquid or soft food to pass the kink. There ·
was no difficult breathing or cardiac irregularity. The case of dia-
phragmatic hernia showed the following: Five weeks before admis-
sion the patient was suddenly seized with severe pain and dyspnea
while engaged in hard physical labor. A few weeks after the first
attack the patient again attempted to work with the same result plus
nausea and abdominal pain. The X-ray did not show the left dome
of the diaphragm, as it was concealed by the fluid stomach contents.
The patient suffered severely with cyanosis, dyspnea and weak
pulse. The physical examination of the first case revealed the mobil-
ity of the lower border of the lungs and no bulging of the intercostal
spaces. The large tympanitic zone was divided into compartments,
probably by the stomach and intestine. No gurgling sounds could
be elicited. In the case of the diaphragmatic hernia there was immo-
bility of the lower border of the lung, bulging of the intercostal spaces
and tympany of the whole left side of the thorax. Gurgling sounds
were heard.   STEIN.

Diaphragmatic Hernia of Stomach and Intestine—P. MARIE and E. JOL-
TRAIN, Bull. et Mémoire de la Société méd. des Hôpitaux de Paris, 1910,
No. 24.

History of a case which terminated rapidly. Stomach and trans-
verse colon were incarcerated in the thoracic cavity through an aper-
ture in the diaphragm. The clinical symptom-complex resembled
much that of a meningitis.   ZIMMER.

**The Peptic Ferment of the Urine and its Diagnostic Import in Gastric
Diseases—**A. ELLINGER and H. SCHOLTZ, Deutsches Archiv f. klin. Medi-
zin, Vol. XCIX, Nos. 3 and 4.

The peptic ferment of the urine is derived principally from the
propepsin which has been reabsorbed from the gastric mucosa. Pep-

sin or propepsin introduced intravenously may be excreted unchanged in the urine. Ingestion of pepsin and subcutaneous injection of pepsin or propepsin produce no increase of urinary ferment. The amount of ferment becomes increased when fasting; it declines after the meals. The normal fluctuations of the urinary reaction remain without potent influence upon the ferment excretion. In the presence of hyperacidity or hypersecretion in the stomach, the urinary pepsin is mostly augmented in the morning micturitions; in a few cases much ferment is also contained in the midday urine. Occasionally the urine is free from proteolytic ferment even when pepsin occurs in abundant amounts in the stomach contents. Concurrence of deficient or reduced quantities of gastric pepsin with large amounts of urinary pepsin points to gastric carcinoma.   · WESTERN.

Diagnosis of Chronic Stomach Troubles—K. WINSLOW, Northwest Med., July, 1910.

So-called chronic stomach troubles are mostly not stomach troubles. Importance of laboratory findings of gastric contents is greatly exaggerated. Careful clinical history is the chief aid in the diagnosis of pertaining cases. Certain symptoms are common to all stomach diseases, namely, epigastric distress, belching, distension, nausea, regurgitation and vomiting. Diagnosis depends on the severity, time in relation to eating, location, duration and preponderance of these symptoms. Excluding neuroses, chronic stomach troubles resolve themselves into chronic gall-bladder disease, chronic appendicitis, duodenal and gastric ulcer and cancer. In 25 per cent. of the cases no diagnosis can be made.   STEIN.

Round Gastric Ulcer—R. LATZEL, Med. Klinik., Oct. 2, 1910.

In the clinic of Ortner at Innsbruck the relative and absolute frequency of gastric ulcer concurring with hypoacidity or anacidity was observed during the last few years. About 40 per cent. of the cases exhibited a low hydrochloric acid contents, about 0.3 to 0.7 per mille, or did not contain any hydrochloric acid at all. It is very likely that the low hydrochloric acid contents stands in connection with the very frequent vegetarian diet of the patient. The antipepsin contents of the blood serum of the patients was augmented or normal in all the cases.   MILL.

Callous Ulcer of the Stomach—G. KELLING, Münchener med. Wochenschr., Sept. 20, 1910.

Callous ulcers of the stomach are caused by the irritation due to the hydrochloric acid and the diminution of the blood circulation. Ulcus callosum runs a chronic course. Pain, vomiting and hemorrhage are of diagnostic import; the most important symptom, however, is a palpable ulcer. Differentiation between callous ulcer and ulcuscarcinoma is difficult or impossible.   MILL.

The Stage of Fatigue in Stenosis of the Pylorus—S. JONAS, Wiener klin. Wochenschr., August 4, 1910.

The beginning of the stage of fatigue is also the onset of the broken compensation of the pyloric stenosis. It makes itself evident by vomiting, which is characteristic of stenosis. The vomit contains food particles from the previous day and sarcinæ. The musculature in the stage of fatigue is very deficient.   · MILL.

Radiologic Conclusions concerning Pyloric Stenosis—M. HAUDEK, Wiener med. Wochenschr., 1910, No. 36.

On the hand of more than 1000 radiologic examinations, which were confirmed upon the operation table, author advances the following conclusions: A stomach which completely expels within six hours a meal consisting of 40 grams bismuth carbonate and 300 grams of a milk dish (Milchspeise) does not arouse suspicion as to the presence of an organic stenosis of the pylorus. If after twenty-four hours a residue of the meal, however small, is contained in the stomach, it is an absolute proof of the presence of a considerable organic stenosis. Periods less than twenty-four hours and down to six hours are indicative of lesser degrees of stenosis, the so-called relative stenoses. An ever so small residue after twelve hours, even if there exists gastric atony, points to stenosis of the pylorus.   MILL.

The X-Ray in the Diagnosis of Gastro-Intestinal Stenosis—J. TORNAI, Berliner klin. Wochenschr., July 18, 1910.

By means of bismuth capsules of various sizes author determines the presence and size of the stenosis. The patient is made to swallow a capsule of 6 mm. and if the X-ray shows it has passed through, the next larger size is swallowed. If the smallest capsule does not pass through, the author gives bismuth mixture. For determining esophageal stenosis glutoid pills of medium hardness are used. If the stenosis of the esophagus is below the diaphragm the patient is told to take a Seidlitz powder before the examination; the ensuing gases forcing the cardia upward. By this method the shadow of the diaphragm does not interfere with the picture. The use of these glutoid pills is particularly valuable in a beginning pyloric stenosis, especially if the examinations are made at regularly repeated intervals. Thus a pill of 10 mm. may pass through at one time and a few weeks later one of 8 mm. will not do so. Under ordinary conditions a pylorus with a lumen of 8 to 10 mm. in diameter will not cause any obstruction. Larger pills remain longer in the stomach than smaller ones. Stenosis of any part of the intestinal tract can likewise be detected. The great advantage of these hard pills is the minimum danger of bismuth poisoning, owing to the fact that they are only dissolved in the lower intestine, and that they only contain a small amount of bismuth.   STEIN.

Oleic Acid in the Diagnosis of Gastric Carcinoma—E. GRAFE, Münchener med. Wochenschr., Sept. 20, 1910.

The etherial extract of the siphoned gastric juice has hemolytic properties. The hemolytic activity is due to the fatty acids, especially oleic acid which latter may be quantitatively determined. This enables one to differentiate between gastric carcinoma and other diseases of the stomach, and often at a period when other methods will fail.   MILL.

Urinary Pepsin in the Differential Diagnosis between Gastric Carcinoma and Apepsia—K. TAKEDA, Deutsche med. Wochenschr., Sept. 29, 1910.

In conditions of apepsia gastrica there will be observed the occurrence of pepsin in the urine. The occurrence of urinary pepsin in the presence of gastric carcinoma seems to stand in a certain relationship to the cancerous changes because the pepsin excretion by the urine only ceases when the carcinomatous growth has attained considerable size. For the early recognition of gastric cancer, however, the examination of the urine for pepsin is worthless.   MILL.

Diagnosis of Duodenal Ulcers—A. O. GÜNZBURG, Deutsche med. Wochenschr., July 14, 1910.

The diagnosis of duodenal ulcers is based upon the pain coming on two or three hours after a meal, relieved by eating and also occurring at one or two o'clock in the morning. These painful attacks recur periodically. Author makes a careful examination for blood in the stools and notes whether it takes longer than seven hours to withdraw a Leube test-meal. If the duodenum is dilated it is possible to elicit a tympanitic percussion note over the quadrate lobe of the liver behind which the duodenum passes. One must be sure that the colon is empty before employing this test.   STEIN.

Gastro-Jejunal and Jejunal Ulceration following Gastro-Enterostomy—D. P. D. WILKIE, Edinburgh Med. Jour., Oct., 1910.

During the past few years, the attention of surgeons has been frequently called to an important sequel of the operation of gastro-jejunostomy, namely peptic ulcer of the jejunum. Author summarizes the known clinical and pathological features of the condition. Two types of jejunal ulceration must be distinguished, the one gastro-jejunal—in which the ulceration occurs at the site of the anastomosis; the other—true jejunal ulceration—in which one or more ulcers form in the jejunum at some distance from the anastomotic opening. In the great majority of cases the ulceration has occurred at or close to the gastro-jejunal anastomosis. The ulceration may manifest itself at any period after the gastro-enterostomy operation from a few weeks to several years. The formation of the ulcer is usually associ-

ated with a recurrence of the gastric symptoms, but in some cases symptoms of perforation have been the first evidence of the ulceration. The tendency to perforation is apparently greater than in the case of gastric ulcer, and the death-rate from such perforation is high. In all the recorded cases, the preceding gastro-enterostomy had been carried out for the relief of a non-malignant affection of the stomach or duodenum. The jejunal ulcer is probably caused by the action of the acid gastric juice on the jejunal mucosa, which under normal conditions is exposed to an alkaline medium.			SACHS.

Periodical Vomiting and Acetone Excretion in Children—C. E. BLOCH, Hospitalstidende, No 23, 1910.

The case of a three year old neuropathic boy who had six attacks of vomiting and acetone excretion in the course of fifteen months. Acetone excretion, however, also ensued in the absence of vomiting. Patient tended to constipation and had been for a long time on a diet in which proteids and fats predominated.
													TESSEN.

Ileocolitis complicated by Acidosis—T. D. PARKE, Jour. A. M..A., Sept. 17, 1910.

Loose bowels, caused by a mild grade of ileocolitis and lasting from one to four days, precede the onset of the typical symptoms. Then labored breathing develops, often suddenly, followed by prostration, restlessness, obstipation, enlargement of the liver. The temperature in some cases becomes subnormal, in others stands around 100 deg. F.; in a few runs high. Vomiting with acetone odor of breath occurs in a good proportion and is absent in others. The urine is limpid and free. Albumin has been present in some and absent in others of the few cases from which urine could be obtained. The ammonia nitrogen appears to be high. Jaundice was absent in every case. During the period of labored breathing the breath feels cold to the hand held in front of the nostrils. This has been interpreted, whether rightly or wrongly, to mean volatile substances thrown out in the respired air. In fatal cases death occurs in from 48 to 70 hours after the onset of labored breathing, 55 hours being about the average. In the cases recovering, the duration of the stage of labored breathing is about the same. Death seems to occur from exhaustion. Convulsions have not been noted and coma has not developed till within a few hours of death. The mortality in a series of thirty-two cases has been 71 per cent.			WESTERN.

Occurrence and Detection of Trypsin and Erepsin in the Gastro-Intestinal Canal—F. FRANK and A. SCHITTENHELM, Zeitschr. f. experimentelle Pathologie u. Therapie, Vol. VIII, No. I.

The presence of erepsin in the feces was definitely demonstrated. The amount of erepsin is much greater than that of trypsin; after administration of laxatives the stools contain more trypsin: Meconium, free from bacteria, shows similar proportion of the ferments. In the absence of pancreatic secretion there seems to occur a vicarious hypersecretion of erepsin. This originates to the greater part from the intestinal secretions. In the presence of erepsin the casein method for the demonstration of trypsin cannot be employed; erepsin has probably the quality of digesting very small amounts of serum albumin. The occurrence of erepsin can only be determined by an exact differential investigation of proteid cleavage. Ovi albumen and fibrin are not at all influenced by erepsin.   WESTERN.

Appendical Dyspepsia—LANCE, Gazette des Hôpitaux, 1910, Nos. 100 and 101.

There exists a grave dyspeptic symptom-complex which is connected with symptoms of chronic, larvate forms of appendicitis. Careful examination makes it possible to differentiate between this affection and ulcerative processes of the stomach and duodenum, disturbances of the biliary ducts and chronic colitis.   ZIMMER.

Hepatic Abscess following Acute Appendicitis—L. A. BIDWELL, British Med. Jour., Aug. 27, 1910.

Hepatic abscess following acute appendicitis is very rare. Hepatic suppuration is as a rule a late phenomenon, rarely occurring until some weeks after the acute attack. In the two cases related by the author, the interval between the onset of the appendicitis and the detection of the abscess was eight and four and a half weeks, respectively. There is little doubt that the poison is carried to the liver by the portal vein, and that the abscess results from a pylephlebitis. The patches of pylephlebitis must be close together and the infection very virulent for a single abscess to form. When the patches are separated by any amount of liver tissue, the small multiple abscesses so commonly found post mortem, resolve. During life it is practically impossible to distinguish between a hepatic and a subphrenic abscess. Should there be bulging of the right chest with increase in the width of the intercostal spaces rather than pushing down of the whole liver, one should favor the diagnosis of hepatic rather than subphrenic abscess. On exploratory puncture if the pus has not the characteristic odor of an appendix abscess, hepatic abscess should be suspected.   SACHS.

Syphilitic Febrile Pylephlebitis, with Remarks upon Syphilitic and Aberrant Types of Hepatic Syphilis—A. R. EDWARDS, Am. Jour. Med. Sciences, Oct., 1910.

Author concludes that what is seemingly a suppurative pylephlebitis with intensely septico-pyemic symptoms may be syphilitic pylephlebitis with spirochete sepsis. There is always the possibility that various vague or obvious portal vein, gall bladder, and liver symptoms may be syphilitic—a possibility of vast therapeutic significance. A diagnosis of syphilis made ex juvantibus may be open to criticism; while not of absolute certainty, such means of diagnosis of syphilis exceed the degree of probability. Hepatic gumma may precisely simulate hepatic cancer, even to the extent of the characteristic cachexia, and perhaps, also, of the significant gastric findings. Certain cases of seeming atrophic cirrhosis may respond to antiluetic remedies. Cholelithiasis, cholecystitis, and hepatic abscess may be simulated by syphilis of the liver. Tertiary invasion of the liver or portal vein may run its course without localized signs, and masquerade as typhoid fever, septicemia, tuberculosis, or malaria. When the Widal reaction, blood cultures, tuberculin test, and examination for plasmodia are negative, it is not phantastic to suggest the employment of mercury and iodides. SACHS.

Clinical Manifestations and Diagnosis of Hydatid Disease of the Liver—C. MacLAURIN, British Med. Jour., Oct. 1, 1910.

Hydatid disease more frequently affects the liver than all the other organs of the body put together. The general symptoms are due to toxemia from interference with the digestive tract, from absorption of toxines produced in a dead and suppurating or infected hydatid, or in rare cases from absorption of toxines produced in an apparently healthy hydatid. The local symptoms are pain, swelling and dyspepsia. About 60 per cent. of adults complain of marked or severe pain. Swelling is an invariable symptom. A rounded swelling beneath the ribs, moving with respiration, dull to percussion, hard or at least tense, often rather tender, continuous with the liver dulness, may be considered as typical of hydatid disease. A thrill is observed in about 5 per cent. of the cases. The growth of the cyst is variable. It may remain quiescent for years, and it then may suddenly take on rapid growth. Digestive disturbances occur with great frequency. Among the complications may be mentioned suppuration which occurs in about 14 per cent. of the cases. Rupture of the cyst, a very grave complication, is probably fatal sooner or later in the majority of cases. Pleurisy with effusion occurs in about 8 per cent. of the cases, and must be taken as implying rupture through the dia-

phragm. Pleurisy with effusion, diaphragmatic pleurisy, liver abscess, cancer of the liver, gall stones, cholecystitis, and cancer of the gall bladder may all be mistaken for hydatid disease of the liver.

SACHS.

Auscultatory Diagnosis of the Coalescence of Large Abdominal Tumors with the Lower Abdominal Wall—V. PIAZZA-MARTINI, Deutsche Zeitschr. f. Chirurgie, Vol. CV, Nos. 3 and 4.

A positive sign for the diagnosis of the adhesion of tumors to the anterior abdominal wall consists in the distinct transmittance of the cardiac sounds over the entire area of the abdominal tumor.

STEIN.

NERVOUS SYSTEM

A New Test for Albumin in the Cerebrospinal Fluid—PÁNDY, Neurologisches Centralblatt, 1910, No. 17.

The following test was performed by author in 250 cases. One drop of cerebrospinal fluid is added to about 1 c.c. concentrated phenol. If proteid matter which is readily precipitated (globulins) is contained in pathological amounts in the spinal liquid, a cloudy, bluish-white turbidity will appear in a few seconds wherever the two liquids come in contact. Among 117 cases of paralysis 106 reacted strongly, and 7 slightly positive, and 5 gave a negative reaction. The negative cases were such of chronic paralysis which may also react negatively with the Wassermann test. In non-paralytic cases a strongly positive reaction occurred but five times, a slightly positive reaction but fourteen times in 133 patients. WESTERN.

Examination of the Cerebrospinal Fluid as an Aid to the Diagnosis in Certain Cases of Insanity, with special Reference to the Protein Reaction—J. TURNER, Jour. of Mental Science, July, 1910.

When cerebrospinal fluid is carefully floated upon a saturated solution of ammonium sulphate, a fine soft stratum is formed at the point of contact in the presence of tabes, paralysis or cerebrospinal syphilis. This reaction depends upon the occurrence of globulin.

SACHS.

Muscular Cramps of Peripheral Origin—BITTORF, Deutsche Zeitschr. f. Nervenheilkunde, Vol. XXXIX, Nos. 3 and 4.

A number of affections are due to a disease of the peripheral neuron. To this group of affections belong clinically all conditions

which are associated with increased mechanical irritability of the musculature, from the mild forms as they appear in alcoholics to the affections known as myocymia and myotonia acquisita. Alterations in electrical irritability go hand in hand with those of mechanical irritability.   WESTERN.

Amyotonia Congenita—A. L. SKOOG, Jour. A. M. A., July 30, 1910.

Report of a case of amyotonia congenita in which a biopsy has been performed and a microscopic examination made of the excised muscle. In this case the diagnosis was made without any hesitancy. The hypotonia of a severe grade, the marked general skeletal muscular weakness, with soft flaccid muscles, absent deep reflexes, diminution of electrical excitability of muscles, but no reaction of degeneration, no orthopedic deformities, normal mind, normal sensation, no subjective pains, no bad heredity and a general healthy appearance make a strong argument for an undoubted diagnosis. In a differential diagnosis several diseases must be eliminated. Acute poliomyelitis can be excluded by its sudden onset, course, acute febrile period, selection of muscle groups, late trophic disturbances and occasionally musculo-tendinous contractures. Polyneuritis gives pain to pressure and movements, and has a different course and onset. The pseudoparalyses of rickets, scorbutus and Barlow's disease are readily eliminated by their outspoken symptoms, cause and course. In the pseudoparalysis of syphilis other specific symptoms are to be looked for, and the Wassermann reaction or its manifold modifications should be resorted to when doubt exists. In myasthenia gravis we have a different age, course, electrical findings and bulbar symptoms. Myelitis, hematomyelia and gliosis give afferent tract symptoms.   WESTERN.

Pain in the Lower Part of the Back, the Hip and extending down the Thigh—J. C. SCHNAPPS, Northwest Med., July, 1910.

Though the pain is usually considered a simple sciatica, it is often due to some condition outside of the nerves, and the most frequent is weakness and irritation of the sacro-iliac joint. The diagnosis is made as follows: The patient is placed face downward, knee flexed, and the thigh gently drawn backward. The thigh of the affected side will not come as far back as that of the sound side. A similar flexion test with the patient on his back and straight knee will show a limitation of motion on the affected side. Any abnormal condition of the hip-joint must be excluded beforehand. Impairment of pressure bearing is shown by the patient's attitude. The trunk is inclined away from the affected side so that the weight is thrown as much as possible upon the sound side. A misstep causes sciatic pain. Tender-

ness on pressing the sides of the pelvis together, or on pressure along the outer edge of the sacrum is confirmatory, but not always present.
Stein.

Serodiagnosis of Tuberculosis and the Etiology of Mental Diseases—A. Marie and P. Beaussart, Revue de médecine, 1910, No. 9.

Authors tried to determine to what extent tuberculosis contributes toward the production of mental diseases. With this end in view they have employed the agglutination method and Marmorek's complement fixation test in 10 patients with melancholia and 5 patients exhibiting delirium of persecution. In a majority of the cases they obtained positive results. Zimmer.

"Neck-Sign" and Contralateral Reflex in the Diagnosis of Meningitis in Infancy and Childhood—J. L. Morse, Archives of Pediatrics, August, 1910.

Author concludes that the contralateral reflex and the neck-sign are never present in healthy infants and children or in those ill with diseases other than of the nervous system. They are almost never present in diseases of the nervous system outside of meningitis. The contralateral reflex is found much less constantly than the neck-sign. Both may occur intermittently or be absent throughout the whole course of the disease. Their presence in an acute disease is strong evidence in favor of meningitis; their absence does not exclude meningitis. The diagnostic value of the contralateral reflex is less than that of the neck-sign. They occur in all types of meningitis and are of no importance in differentiating between them. Western.

Psychasthenic Attacks resembling Epilepsy—T. J. Orbison, Am. Jour. Med. Sciences, Sept., 1910.

All patients with psychasthenic attacks resembling epilepsy are females, with an asthenic mental condition that is unquestionable. Ignoring the attacks themselves, every case would be diagnosed psychasthenia. All the cases fear epilepsy or insanity. The assurance that these fears are groundless is a great boon to the sufferer.
Sachs.

URINARY ORGANS—MALE GENITALIA

New Method of Testing Renal Function—J. Wohlgemuth, Berliner klin. Wochenschr., August 1, 1910.

This test is based on the fact that the urine in health always contains some diastase, but if the kidney is diseased only an insignificant amount can be found. By catheterization of the ureters the urine is collected in two sets of ten test tubes each, one set for each

kidney, each test-tube containing 0.06 to 0.6 c.c. urine. Enough salt solution is added to bring the total to 1 c.c., then 2 c.c. of a starch solution, 1 : 1000, are added, and the whole rack placed for half an hour in a water bath at 38 or 40 deg. C. Drop by drop a 1/50 iodine solution is added to each test-tube until the color remains permanent. The results of the two sets are then compared. In health the amount of diastase eliminated by both kidneys is about equal. The test corresponds in accuracy with the indigocarmine and phloridzin tests but is simpler and quicker.   STEIN.

Chronic Nephritides due to Acute Systemic Infection—HEINRICH STERN, Am. Jour. Med. Sciences, Aug., 1910.

Kidneys, acutely affected at one time, are thereafter possessed of a lowered degree of resistance in many, and of a diminished functional activity in some, of the instances. It is very difficult, so far as positive demonstration is concerned, to establish an etiological relationship between an existing chronic nephritis and a systemic infection that had been of a more or less transitory nature. Clinical evidence, however, prompts us to regard acute systemic infection as one of the causes of chronic renal disease. The typical renal involvement concomitant with or following an acute infectious disease is of a parenchymatous nature. About half of the chronic nephritides evolving from nephritic processes that have originated during or after an acute infectious disease, are predominatingly parenchymatous; in about 20 per cent. of the cases indurative processes follow in the wake of acute parenchymatous inflammation, or supervene in the presence of subchronic or chronic parenchymatous states; and in about 30 per cent. of the cases amyloid lesions concur with the original parenchymatous affection. The direct transformation of an acute nephritis into a chronic form has been observed in comparatively few instances only; however, the successive transition from an acute nephritic process through subacute and subchronic stages to the chronic condition can be traced clinically with more or less accuracy in a considerable number of cases.   SACHS.

Ophthalmic Studies in Chronic Interstitial Nephritis—L. C. PETER, N. Y. Med. Jour., Aug. 20, 1910.

Increased blood pressure is probably the chief cause of eye changes found in chronic interstitial nephritis. Eye phenomena are an aid to diagnosis and prognosis in this form of chronic renal disease. In order to prevent, if possible, the more serious forms of eye changes, an early diagnosis is essential. In diseases involving the renal and arterial systems, a joint study by internist and ophthalmologist is productive of the greatest amount of good to the patient and to the physician.   WESTERN.

The Microscopic Examination for Tubercle Bacilli in the Diagnosis of Tuberculosis of the Urinary Organs—G. SCHUSTER, Deutsche med. Wochenschr., Sept. 29, 1910.

It is always imperative to use catheter urine when searching for tubercle bacilli because it seems to be free from smegma bacilli. The danger of mistaking smegma bacilli with tubercle bacilli is not very great. The form of the bacilli even shows distinct discrepancies. Smegma bacilli unlike tubercle bacilli are discolorized with corallin-methylene blue in most instances. A 10 to 15 per cent. solution of antiformin destroys smegma bacilli. Non-detection of tubercle bacilli does not prove anything. Animal experiments have to be resorted to in such instances. The detection of tubercle bacilli, on the other hand, is sufficient proof of the existence of tuberculosis of the urinary tract.   MILL.

Hypertrophy of Bladder Trabeculae—Early Sign of Tabes—A. FROHN-STEIN, Zeitschr. f. Urologie, July, 1910.

In a series of suspected or fully developed cases of tabes, hypertrophy of bladder trabeculæ was present in every one. Very often this was the earliest sign of the disease, as later developments confirmed.   STEIN.

Chondrocarcinoma of the Testis—W. SHEEN, H. A. SCHOLBERG and R. L. M. WALLIS, Lancet, Sept. 17, 1910.

Primary new growths of the testis are comparatively rare. Chondrocarcinoma, which belongs to the embryoma class of tumors, occurs generally in a male adult of about 30 years, often following an injury, as a blow. Sometimes there is a considerable latent period between the blow and the rapid growth of the tumor. The tumor is often painless, and the attention is only called to it because of its size and weight. Metastasis is very rapid and general, and the growth is often highly malignant. The abdominal organs and the lungs are respectively the most frequently affected. The general health is at first unaffected, and may remain so even at the commencement of the formation of metastases.   SACHS.

New Method for the Detection of Spermatozoa in Old Stains—D. GASIS, Deutsche med. Wochenschr., July 21, 1910.

Between the periphery and center of the suspected stain the cloth is cut off, finely divided and placed for from 2 to 5 minutes into 1 to 2 c.c. of a 1 : 1000 solution of mercury bichloride to which a few drops of hydrochloric acid are added. A drop of the liquid is then expressed by means of a glass rod, spread on a slide, dried

over a small flame and placed for one minute in a one per cent. watery eosine solution. It is then decolorized with a one per cent. potassium iodide solution for a few seconds. If no spermatozoa are found, the cloth is laid for five minutes in mercury bichloride and the fluid allowed to stand for half an hour or centrifuged. The spermatozoa will be found at the bottom and are stained and counter-stained in foregoing manner. STEIN.

FEMALE ORGANS OF GENERATION—PREGNANCY—PARTURITION—INFANTS

Varicocele in the Female—O. HOFFMAN, Am. Jour. of Obstetrics and Diseases of Women and Children, Vol. LXI., No. 7, 1910.

The two main points in the diagnosis of varicocele in the female are: (1) the disappearance or amelioration of pain when the patient is in the recumbent posture, and, (2) a palpable mass felt by vaginal or rectal examination with the patient in the erect posture when no or only a slight mass is palpable in the recumbent state. To make the examination patient is first placed in the Trendelenburg posture for a few minutes, then allowed to come into the horizontal position and examined and finally examined in the erect posture. The usual pain is of a dull character in the pelvis and frequently shooting upward to the costovertebral angle. STEIN.

Amenorrhea and Tertiary Syphilis—MEIROWSKY and FRANKENSTEIN, Deutsche med. Wochenschr., August 4, 1910.

In three women with severe tertiary lues, amenorrhea persisting six, respectively eight years, ensued at the time of puberty. Following specific treatment menstruation occurred again in two of the patients; the third case exhibited typical menstrual difficulties and vicarious epistaxis. MILL.

Duration of Pregnancy, with a New Rule for its Estimation—E. McDONALD, Am. Jour. Med. Sciences, Sept., 1910.

The rule is as follows: The duration of pregnancy in lunar months is equal to the height of the uterus in centimeters divided by 3.5. It depends upon the more or less regular growth of the uterus of 3.5 cm. each month of four weeks, and is very exact after the sixth month. The measurement is taken with the patient lying flat, and one end of the tape is placed at the upper border of the symphisis, while the other is held by the thumb into the palm of the hand. The fingers of the upper hand are held at right angles to the fundus of

the uterus and the tape follows the contour of the uterus save at the last dip. This method gives satisfactory results and is the most exact means of estimating the duration of pregnancy. It is strictly an estimation of the size of the fetus. An average-sized baby usually comes at the average period of pregnancy—hence the rule.

<div align="right">SACHS.</div>

Local Tuberculin Reactions during Pregnancy and the Puerperium— STERN, Zeitschr. f. Geburtshilfe u. Gynäkologie, Vol. LXVI, No. 3.

Among healthy non-pregnant women 65 per cent. give a positive cutaneous and 14.5 per cent. a positive ocular tuberculin reaction. During the first six months of pregnancy the reaction ability declines to 54 per cent. with the cutaneous, and to 7 per cent. with the ocular test. From the seventh to the eighth month the cutaneous reaction is positive in 36.8 per cent., in the ninth month in 30.8 per cent. and in the tenth month in 28.3 per cent. of the cases. The ocular reaction was always negative after the sixth month. In the puerperium the reaction ability again increases to 67 per cent. with the cutaneous and to 11 per cent. with the ocular test. The decline of reaction ability during pregnancy may be ascribed to a possible decrease of the tuberculosis antibodies. A certain prognostic value is attached to the reaction in the first half of the period of pregnancy and in the puerperium. The reactions possess some import as far as the diagnosis is concerned, but only when employed in conjunction with the physical methods. MILL.

Value of Blood Pressure Determinations in Toxemia of Pregnancy—H. J. STARLING, Lancet, Sept. 10, 1910.

In the whole period of a normal pregnancy, the blood pressure is normal, that is from 110 to 120 mm. Hg. A rise of blood pressure above 125 mm. Hg. is an indication that the pregnancy is not normal, and should suggest the possibility of toxemia to the physician.

<div align="right">SACHS.</div>

Acute Thyroiditis in the Course of Puerperal Infection—P. LECÈNE and METZGER, Annales de Gynécologie et d'Obstetrique, February, 1910.

Acute thyroiditis is one of the rare complications of puerperal infection; it may run a very mild course so that its presence may not be noted; in other instances the severity of the symptoms of the general infection overshadow those of the thyroiditis. Acute thyroiditis may terminate in absorption or suppuration. Its symptoms are, difficulty of deglutition, pain behind the sternal manubrium, and swelling in the thyroid region. ZIMMER.

Ectopic Gestation—J. M. KEYES, N. Y. Med. Jour., Aug. 6, 1910.

Ectopic pregnancies must be differentiated from other pregnancies, as uncomplicated uterine pregnancy, a gravid, bicornuate uterus, a gravid, retroflexed uterus. The possibility of coexisting tubal and uterine gestations must be borne in mind. Ovarian cysts, especially those with twisted pedicles or such as by inflammatory attacks become attached to the uterus. Intraligamentary tumors also confuse one and often these can be differentiated only by incision. Rupture may be simulated by uterine abortions, appendicitis, rupture of intestinal ulcers, twisted or inflamed pelvic tumors, a combination of abortion with pelvic cyst or pyosalpinx.   WESTERN.

Influenza in Nurslings—S. WEISZ, Med. Klinik, Sept. 11, 1910.

Author had occasion to observe two epidemics of influenza in a number of nurslings. The symptom-complex exhibited by the affection was different from that usually seen in influenza. In the first epidemic the following observation was made: The mild influenzal condition in a nursling affecting the upper respiratory tract was followed by a febrile influenzal state in a number of nurslings who occupied the same room in the public institution. There was no doubt concerning the influenzal character of the latter infection. The fever, in spite of all therapeutic endeavors, did not yield after the usual period, but lasted with some brief interruptions for a number of weeks. Change of surroundings only brought about the reduction of the fever in some of the infants. The other epidemic showed the following: As a result of an ordinary respiratory form of influenza in an adult or infant a number of nurslings, who were in the same ward, became infected especially exhibiting gastro-enteric symptoms of various intensity. There occurred loss of appetite, diarrhea, marked loss of weight and also vomiting. In the more resistant the infection was readily subdued by resorting to breast feeding. In the others, who were sickly, no therapeutic endeavors availed.   MILL.

Bibliography

HOOKWORM DISEASE. Etiology, Pathology, Diagnosis, Prognosis, Pro-
phylaxis, and Treatment. By George Dock, A.M., M.D., Professor of the
Theory and Practice of Medicine, Medical Department Tulane University
of Louisiana, New Orleans, and Charles C. Bass, M.D., Instructor of
Clinical Microscopy and Clinical Medicine, Medical Department Tulane
University of Louisiana, New Orleans. Illustrated with 49 Special Engrav-
ings and Colored Plate. St. Louis, C. V. Mosby Company, 1910.

We fully subscribe to the authors' prefatory remarks that few
affections surpass hookworm disease in the strangeness of its history,
the importance of its ravages, or the theoretic ease of its extinction.

The book, which is divided into ten chapters, gives a lucid and
comprehensive résumé of all that is worth knowing about hookworm
disease. The chapter on diagnosis deals with the following topics:
Direct diagnosis by examination of feces for ova—practical examina-
tion of stools—making the preparation for microscopic examination
—description of eggs—number of worms estimated from eggs—dif-
ferential diagnosis of eggs—cultivation of larvæ from ova—special
methods for greater certainty in finding eggs: Pepper's. Bass'—di-
agnosis by examining stools after treatment—blotting paper test—
eosinophile count in diagnosis.

There is no better work on the subject, and the knowledge it im-
parts in so readable a style ought to become the property not only of
the physician, but also of every sanitarian and educator.   H. S.

DIAGNOSIS OF SYPHILIS. By George E. Malsbary, M.D., Professor of
Medicine, Cincinnati Polyclinic and Post-Graduate School, etc. Cincinnati,
Harvey Publishing Company, 1911.

An up to date representation of the subject under consideration.
The author has devoted much effort to the exploitation of laboratory
diagnosis, as the methods of recognition of the spirochaete pallida,
and the technic and relative value of the Wassermann and other
serum tests. The syphilitic affections of the various organs have
been considered in detail. The author concludes that the therapeutic
test for syphilis is not always reliable. Other diseases sometimes re-
spond to the use of antisyphilitic remedies in the absence of syphilis.
Some of the manifestations of syphilis respond very slowly or not
at all to the use of antisyphilitic measures. The author condemns the
use of the term "parasyphilis"; cases are either syphilitic or non-
syphilitic. Later researches may possibly reveal a use of the term
analogous to the designation "paratyphoid" in relation to true typhoid
infection.

A very complete recent bibliography bearing on the diagnosis of syphilis and occupying nearly 116 pages, is appended to the very practical work.   . H. S.

DISEASES OF THE STOMACH AND UPPER ALIMENTARY TRACT.
By ANTHONY BASSLER, M.D., Gastro-Enterologist to the People's Hospital, and Physician to St. Mark's Hospital Clinic, New York. Copiously Illustrated with Numerous Half-tone and Line Text Engravings and 56 Full-page Plates Plain and in Colors, from original Photographs and Drawings. Philadelphia, F. A. Davis Company, 1910.

Graceful diction, sound pathology, comprehensive symptomatology and diagnosis, well-founded treatment and a proper appreciation of the interrelation of internist and surgeon have in unison produced a very valuable book on the diseases of the stomach and upper alimentary tract.

The typographical work and half-tone plates are excellent.
K. B. P.

ESSENTIALS OF LABORATORY DIAGNOSIS.
By FRANCIS ASHLEY FAUGHT, M.D., Director of the Laboratory of the Department of Clinical Medicine and Assistant to the Professor of Clinical Medicine, Medico-Chirurgical College, Philadelphia. Second Revised Edition. Philadelphia, F. A. Davis Company, 1910.

The publication of the second edition of this little book so closely following the first speaks well for its usefulness. A number of new and tried tests have been added.   H. S.